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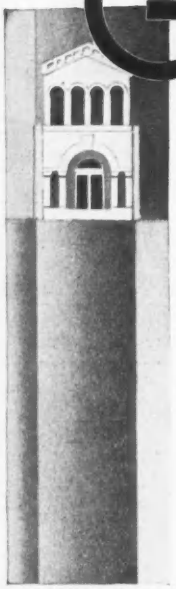

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VOLUME XXXIX OCTOBER, 1933 No. 4

CANCER—PRESENT TRENDS IN ITS TREATMENT*

By ARTHUR C. CHRISTIE, M. D.
Washington, D. C.

THE past ten or twelve years have witnessed a remarkable change in the attitude of the medical profession toward cancer therapy. It is doubtful if any disease has ever created a wider or more intense interest than has cancer during the past decade. The success of the persistent campaigns to control pulmonary tuberculosis stimulated the American Society for the Control of Cancer, and similar organizations in other countries, to attempt a like campaign to inform the general population of the dangers of cancer, and of the possibilities of prevention and cure. The results of these efforts are not yet apparent. The problem is different, and in many respects much more difficult than that of the control of tuberculosis. The cause of cancer is not known, and the problems of diagnosis are exceedingly complicated. It is very doubtful if periodic health examinations, as they are usually performed, will be of any real value in the early recognition of cancer. It must be apparent that the diagnosis of cancer in its most common locations requires careful and expert inspection of the nose, mouth, throat, esophagus, stomach, colon, rectum, the lungs, kidneys, bladder, prostate, the thyroid gland, breasts, vagina, uterus and ovaries, and the entire skeletal system. The search must include not only the usual methods of physical examination, but the use of many laboratory methods and x-ray, as well as the services of several specialists. The value of an examination is very limited which must necessarily fail to recognize the presence of many early carcinomas. I would not attempt to minimize the value of periodic health examinations, but in the present state of our knowledge there is little possibility of their greatly reducing the incidence or improving the mortality statistics of cancer. The general publicity given to cancer has had, however, a good effect in inducing many patients to consult a physician earlier than they would have done otherwise, and in stimulating the medical profession to more careful examination for the presence of the disease. Although there are many cases of cancer which cannot be cured even if recognized early, nothing has been more thoroughly emphasized by experience than the fact that the chances of cure of cancer are in direct relation to earliness of diagnosis.

PROPHYLACTIC FIELD IN CANCER

The prophylactic field in cancer is still restricted and probably will remain so until we know the cause of the disease. There are several fields, however, in which preventive measures are of value. In gynecology, for instance, there are great preventive possibilities in the cure of inflammatory conditions of the uterus and cervix. The same is true in the mouth. The importance of the early and proper treatment of precancerous lesions is becoming increasingly recognized. These lesions include not only those of the skin, but such conditions as papilloma of the larynx, lower bowel and bladder, leukoplakia, and chronic indurative inflammatory processes in the breast and elsewhere. The physician who is alive to the possibilities of the development of cancer and to its dangers can do much in the way of prophylaxis.

CANCER'S PLACE IN THE STATISTICAL TABLES

Cancer has now come to occupy the second place in our statistical tables as a cause of death, with a rate of about 95 per 100,000. Statisticians inform us that this rate will probably rise to almost 125 per 100,000 when the disease becomes better recognized. It is not yet certain that cancer is really becoming more prevalent, although this is apparently so. A considerable part of the apparent increase is undoubtedly due to more accurate diagnosis, and part of it to the fact that a larger percentage of the population is now living to reach the cancer age than was true a few years ago. We need not labor the point, however, to emphasize the importance of a disease that occupies second place as a cause of death, and which ranks in this respect above both tuberculosis and pneumonia.

PRESENT POSITION AS REGARDS CANCER

Out of the experience and the tremendous amount of research of the past ten years a few facts have gradually crystallized. A proper appreciation of these facts will enable us to estimate our present position in the battle against malignant disease.

* Guest speaker paper, read before the Radiology Section of the California Medical Association at the sixty-second annual session, Del Monte, April 24-27, 1933.

The first of these is a frank recognition that there are many cases of cancer which, because of their location, extent, or type of the disease, are incurable by any method known to us today. I need only mention in this category such conditions as osteogenic sarcoma and cancer of the stomach, pancreas, or liver. The means of cure for these conditions and a large number of other malignant neoplasms are still unknown. We must recognize this, and not attempt the impossible with the means now at our disposal.

The second fact which is now recognized, and which must be courageously faced, is that surgery in malignant disease has reached the limit of its possibilities. Nothing stands out more clearly in a study of the past ten years' experience in treatment of cancer than the fact that the limits of operability in cancer are becoming more and more restricted. This is well illustrated by the facts now apparent with regard to surgical treatment of cancer of the breast. The first limitation is the age of the patient. It is well known that cancer of the breast in young women, even up to the age of forty, is a particularly deadly disease and that the percentage of cures is almost negligible. It is almost equally well recognized now that after sixty-five years of age cancer progresses slowly and the patient has a good chance of living out her full expectancy. In other words, it is not likely that the general average age of women over sixty-five with cancer of the breast is increased by radical surgery.

The other important limitation to surgical resection is the extent of the disease. It is becoming increasingly recognized that cancer of the breast has reached an inoperable stage when it is clinically demonstrable beyond the breast itself. There is nothing more discouraging than contemplation of the statistics of breast cancer in the hands of the best surgeons in the world when the operation has been performed after axillary nodes are palpable.

It is not only in cancer of the breast that the field of surgery is narrowing. Its application to malignant conditions about the tongue, mouth, throat, and neck has become greatly restricted; cancer of the uterine cervix can hardly be considered any longer in the surgical field; and cancer of the prostate offers no hope whatever of cure by surgical removal.

It is very important that these facts be recognized. Surgery has an important place in cancer therapy, and its value will be increased if its limitations are sharply laid down and adhered to.

RADIATION THERAPY

I come now to the only other method which has proved of value in the treatment of malignant neoplasms; that is, radiation by means of the x-ray and radium. In contrast to surgery during the past ten years, radiation has been gradually enlarging its field. The indications now are that this will continue for some time, but already its limitations are becoming apparent.

Early in the 1920's, under the leadership of German radiologists, extravagant claims were made for deep x-ray therapy in cancer. Many of the claims proved unjustified, but modification of the methods originated at that time has brought about important advances in radiation therapy.

Among these advances which are just now being recognized none seems more important than the time element in the application of radiation therapy. Many are now using some modification of Coutard's method, or a combination of that with Pfahler's saturation method, with improvement in the results of x-ray therapy. The improvement is thought to be due to the much greater dosage that can be applied without injury to normal structures. The time element is important in the repair of normal tissues. Along with this change in the time of application of the total dose the opinion is becoming quite general that greater filtration is also an advantage. We have been led to believe that increase in thickness of filter over that represented by one-half millimeter of copper serves only to decrease the total dose; but there is a very general impression among radiologists that the biological and clinical results do not support this dictum. We believe that we are witnessing improved results by the use of one millimeter of copper in our 200 kv. therapy over that secured when only one-half millimeter was used. We have been able to give a dose of 5000 r's with no permanent injury to the skin, and the apparent cure of lesions which had been intractable under other methods of treatment. The same principle has been extended to radium, so that now it is scarcely permissible to use interstitial radium applications with less than a millimeter of platinum filter, and some use routinely as much as two millimeters. There is no doubt that the results, both with regard to the malignant disease and conservation of the normal structures, are greatly improved by the increase in thickness of filter. Recent investigations by Failla and his associates seem also to indicate that further advantages may be expected by the use of shorter wave lengths obtained by voltages up to 750 kv. Certainly there is much now to lead us to believe that we can obtain a better relation between the destructive effect upon the malignant structure and the reparative process in the normal tissues by lengthening the time of delivery of the total dose and by increased filtration.

These improved methods have proved of great value in our own practice in treatment of malignant tumors of the nose, mouth, throat, neck, and larynx. We have seen particularly good results after doses varying from 2000 to 5000 r's in very difficult cases of malignancy involving the cartilages of the nose and ear.

INTERSTITIAL RADIATION

Another important advance during the past few years has been improvement in methods of interstitial radiation. The harmful effects of radon in glass seeds brought about the replacement by gold and platinum seeds. In many hands these have been in turn replaced to a large extent by the radium element in needles of various lengths of a least 1 millimeter of platinum thickness and with approximately .3 milligram of radium to the run-

ning centimeter. With such needles *in situ* for eight days, a dose can be secured of 100 milligram hours per 1 cubic centimeter of tissue.

It must be remembered that the technique of interstitial radiation is very exacting and that the method has distinct limitations. Experience has taught nothing more thoroughly than the fact that it is dangerous to traumatize cancerous tissue. The disease can be disseminated just as certainly by the traumatism produced by insertion of radium needles as by cutting through the tissue with a knife. Thorough irradiation by x-rays is just as essential before insertion of radium needles as is preoperative irradiation. I need not emphasize the importance of uniform dosage throughout the cancerous area by means of uniform implantation of the needles.

DANGER OF OVERTREATMENT

Another consideration I wish to bring to your attention is in the nature of a caution. Many cases of cancer are incurable at the time the physician is consulted. The temptation to overtreat such patients is just as strong in the radiologist as it is in the surgeon. Just as the surgeon must curb his desire to operate in such cases, the radiologist must refrain from harmful overtreatment. No good can come either to the patient or the method of treatment by radical treatment of cases in which only palliation is possible. For instance, in a woman past sixty-five years of age with cancer of the breast there should be the most careful consideration before interstitial radiation is resorted to. It is quite likely that the best results will be secured in such a case with the least harm to the patient by deep x-ray therapy alone.

It is incumbent on the surgeon and radiologist alike to recognize the limitations as well as the possibilities for good in the methods he is using.

PRESENT-DAY INVESTIGATIONS

At the present time a vast amount of research is being carried out in the hope of throwing light on the nature of cancer. Occasionally such work brings to light facts which can be directly applied to the problems of cancer treatment. For instance, the Aschheim-Zondek reaction has proved a very useful control in the treatment of teratoma testis. After removal of the primary growth roentgen therapy is continued until the reaction is negative even though there are no palpable glands or other evidence of the disease. Cures have been observed in the past after extensive metastases, and now that we have a method of early determination of recurrence, treatment may be applied much more intelligently.

The general situation in the field of cancer therapy is far from hopeless. It is not a cause for pessimism that we have come to recognize the limitations of some of our methods of treatment. Much good can be accomplished even in those fields in which we cannot hope to bring about a cure. At the present time, as your speaker sees it, improvement in the field of x-ray and radium therapy offers the best hope for progress.

1835 Eye Street, N. W., Washington, D. C.

PROCEDURES FOR IMMUNIZATION AGAINST COMMUNICABLE DISEASES*

By EDWARD B. SHAW, M. D.
San Francisco
HENRY DIETRICH, M. D.
Los Angeles
AND
THOMAS C. McCLEAVE, M. D.
Oakland

DISCUSSION *by W. P. Lucas, M. D., San Francisco; Clifford Sweet, M. D., Oakland; W. H. Kellogg, M. D., Berkeley.*

FOREWORD.—The following report on the specific prophylaxis of communicable disease is submitted to the section on pediatrics of the California State Medical Society by a committee, consisting of the authors, which was appointed for this purpose last year. This report has been revised in accordance with suggestions made by several members of the section, and also by several authorities outside the section's membership. These latter include Dr. Wilfred Kellogg, Dr. Karl Meyer, Dr. William H. Park and Dr. W. M. Dickie. To all who have aided, the committee wishes to express its gratitude.

It has been our hope that this report would constitute an outline for immunization to which all members of the section could subscribe, and which might serve as a guide throughout the state. The presentation has been confined to the essentials involved without reference to literature or the discussion of debatable points. Many questions are a matter of opinion, and they are stated as such without reference to contrary views. It is planned to revise the report annually, adding such refinements as seem desirable.

DIPHTHERIA

The advisability of diphtheria immunization is unquestionable: the disease is sufficiently widespread to constitute an ever present menace, and is attended, even with good treatment, with a mortality rate which is reducible only by immunization.

Age.—Children may be immunized from six months of age onward. Immunization should be routine at one year, and should be advocated up to adolescence. Adults should be immunized if they are exposed to any hazard of infection, as in the case of medical students, dentists, nurses, social workers, school teachers, public school workers, etc.

Material.—Toxoid should be employed for young children, who seldom manifest severe reactions from its use. In older children, above ten years of age, and in adults, toxoid frequently produces unpleasantly severe reactions, so that in these cases it is desirable to substitute toxin-antitoxin for toxoid, or to employ toxoid in doses which are initially, at least, smaller than those usually chosen.

* A report outlined for the Section on Pediatrics of the California Medical Association.

* Read before the Pediatrics Section of the California Medical Association at the sixty-second annual session, Del Monte, April 24-27, 1933.

Dose—Toxoid for Infants and Children Under Ten Years.—Routine immunization consists of three injections given two weeks apart. The initial dose is one-half cubic centimeter, second and third doses are each one cubic centimeter. A shorter interval is permissible if it is desired to hurry the procedure. Somewhat longer intervals than two weeks between injections are equally effective and do not increase the risk of reaction.

For Immunization Over Ten Years of Age.—In older patients the procedure employed should be *individualized*, depending on the reaction produced by an initial small dose of toxoid. The initial dose should be ***one-tenth*** cubic centimeter. In the majority of cases this produces no marked reaction, and can be followed at intervals of two weeks by doses of one-quarter, one-half and one cubic centimeter. If considerable reaction is produced about the site of any injection, succeeding doses should be cautiously increased. Immunity is usually produced by even such small doses as a series of one-tenth, two-tenths, two-tenths cubic centimeters; and in such cases, after an interval of from three to six months, the immunity may be determined by a Schick test, and in the event of failure, the course of injections should be repeated, with perhaps some increase of dosage.

It should be emphasized that the need for immunization is the greatest in small children, and with them special methods of procedure are seldom necessary. If toxoid is routinely employed at the age of one year, reactions are very rarely encountered and the routine method may be confidently followed.

Toxin-antitoxin Mixture.—This can be used instead of toxoid. It does not produce immunity, however, with as much certainty as toxoid. Three doses should be given at intervals of from one to two weeks in doses of 1.0 cubic centimeter. Toxin-antitoxin contains less protein than does toxoid, and thus does not produce as much reaction following injection; and it may therefore be substituted for toxoid in the case of older patients, if desired. Unlike toxoid, toxin-antitoxin contains small amounts of horse serum and introduces the possibility of horse serum sensitization. The amount of horse serum is so minute, however, as to introduce no danger of immediate reactions, even in the serum sensitive patients. New immunizing agents are being, and will be introduced, which it may be desirable to employ when their value has been demonstrated.

Schick Tests.—In most communities the susceptibility rate to diphtheria, under ten years of age, is sufficiently high that it is feasible to proceed with immunization without first performing a Schick test. This results in unnecessary injections of toxoid in a few cases, but saves time, obviates some errors, and does no harm. After the age of ten years, a high percentage of children have become naturally immune and it is preferable to determine the need for immunization by the performance of a Schick test before immunizing.

Schick tests should always be performed three to six months after immunizing injections are given to confirm immunity. The performance of this final test is the responsibility of the physician who carries out immunization, and it is not justifiable to assume protection simply because a high percentage are immune after toxoid injections. About 95 per cent of those receiving the recommended three doses of toxoid will be found to be immune at this subsequent test, but the five per cent not protected will enjoy a fallacious sense of security which may lead to dangerous errors should they be exposed to diphtheria, or develop the disease and possibly help bring immunization into disrepute.

Schick Test Material.—Most commercial laboratories supply toxin for tests contained as a minute quantity in a small vial, together with a second vial of normal saline which is used to dilute the toxin in proper concentration for the test. Dilutions must be made immediately before the material is used, for after the lapse of a few hours it cannot be relied upon. In one-tenth cubic centimeter of the diluted solution is contained 1/50 M. L. D. of toxin (sometimes 1/40 in 0.2).

In the performance of the test, one-tenth cubic centimeter of the diluted toxin is injected intracutaneously into the flexor surface of the forearm about one-third the distance below the elbow. It is important that the material be injected intracutaneously in such a way as to produce a very superficial bleb. The reaction from this test is purely local and consists of a small zone of inflammation produced by the toxin in case the patient's immunity is insufficient to neutralize it. This response appears after a latent period, and is usually marked at forty-eight hours; but in some cases it develops at sixty to seventy hours, often increases for several days thereafter, and gradually fades, leaving an area of desquamation and sometimes pigmentation afterward.

Schick Test Control.—Certain individuals react locally to constituents of the test solution other than the toxin. This has no relation to immunity and is commonly encountered in those above the early age group. Such reactions introduce possible sources of error into the test and render it imperative that a control solution be employed which contains all the constituents of the test solution except the toxin.

The control solution consists of diluted toxin which has been heated to 75 degrees to 80 degrees centigrade for from five to ten minutes. Heating renders the toxin inert. Control solutions need not be freshly diluted and are furnished on request, ready diluted for use, by most commercial houses. It is quite easy to improvise a control by diluting the test material, dividing it into two portions, using half for the tests and heating the rest to 80 degrees centigrade for ten minutes and using this as control. The control solution is preferably injected into the opposite arm in a similar manner and at a site similar to that in which the test solution was injected. In general the reaction produced by the control is characterized by less redness and induration than the toxin, reaches its height more quickly, subsides faster, and is at-

tended by less irritation, desquamation and pigmentation. Nevertheless, reactions due to substances other than the toxin produce reactions of such sufficient degree as to make accurate Schicks impossible unless a control is used.

Reading Schicks.—Tests should be inspected seventy-two hours after their application and in case of doubt, as when marked reactions occur from the control, should be inspected a week after performance. Rarely an uncomplicated positive reaction is delayed four days in its appearance. Four types of response are encountered:

1. No reaction about either injection.	Patient immune
2. Equal reactions about both injections. (The patient reacts only to constituents other than toxin.)	
3. Reaction about the toxin injection, none about the control. The patient reacts to toxin, but not to other constituents.	Patient not immune
4. Reaction about toxin injection, which is perceptibly greater than one also present about control. The patient reacts to toxin and also to other constituents.	

Accuracy of interpreting Schick tests improves with experience, but the procedure is not difficult. The test (or a Kellogg test, see below) is essential to proper performance of immunization. Greater accuracy is secured if a number of tests are performed at one time, since by comparison of the response in different individuals with the same solution different degrees of response may be evaluated. Furthermore, since many packages of Schick toxin, owing to its instability, are inert by the time they reach the physician, the danger of false negatives from this cause may be obviated by the control secured in treating a number at one time. It should be recognized, however, that when all patients being tested have been recently immunized, this control value of numbers is considerably lessened. In cases of doubt the test should be called positive (no immunity). If the test indicates lack of immunity, toxoid injections should be repeated, or if these are refused, the patient should be told that he is not immune. If a patient has a positive Schick test following attempted immunization it is not justifiable to assume that any degree of partial immunity exists which will serve to protect from severe diphtheria. Deaths from diphtheria have occurred under just these circumstances.

The necessity for Schick testing as a final step in the production of immunity is stressed because of the fact that in mass immunization it is often assumed that universal administration of toxoid will result in so nearly complete protection of a group that the small residue of nonimmunes can be ignored. This permits a group to exist in which immunity is assumed, but is not actually present. Diphtheria immunization should not be delegated by the physician to public health authorities. It should be the responsibility of every practicing physician to advocate strongly that all children under his care be immunized, and he should attempt to see that proper procedures are carried out by himself, by a colleague or, if economic factors indicate, by a clinic. It is highly advantageous from the standpoint of both physician and patient that the latter's medical record contain information regarding immunization and subsequent Schick reaction. It cannot be regarded as desirable that children be immunized in groups under conditions which do not permit accurate data to be kept for their benefit at some future time. It is felt to be the duty of school health, or public health authorities who undertake immunization to confirm the presence of immunity by Schick or Kellogg tests.

Kellogg Test.—This test, developed by Dr. Wilfred Kellogg, may be used as a substitute for the Schick test. This is a test, performed upon laboratory animals, for antitoxin content of the patient's blood. The test is performed in Doctor Kellogg's laboratory upon request, and the submission of a few drops of the patient's blood. Reports are returned that the patient is immune or not immune to diphtheria. Kellogg tests will not always exactly parallel Schick reactions for various reasons, chief of which is that, although the patient's blood may contain less than the amount of antitoxin which is taken as indicating immunity (1/30 unit of antitoxin per cubic centimeter), he may have a negative Schick test and be actually immune. This is because he has the capacity of quickly mobilizing antitoxin in response to the injection of even so small an amount of toxin as that contained in the Schick test dose. Similarly, such a person will be found to react to this small stimulus by giving an immune response to the Kellogg test within forty-eight hours. Discrepancies are not particularly troublesome, however, because this latent immunity, marked by a negative Schick and positive Kellogg, occurs only in a limited percentage of older children and adults; and if a Kellogg test is returned as "immune" after immunization, this is satisfactory evidence of immunization. The test is especially valuable when small numbers of children are to be tested, and when it is necessary to test them one at a time.

Ready Diluted Schick Toxin.—This toxin in the form of a stable dilution in peptone solution is now furnished by many commercial laboratories. This new diluent is still in the experimental stage and therefore cannot be recommended for routine use. Like the Kellogg test, it is of especial usefulness when only one or two children are to be tested at a time. The material is supplied already diluted for use, and the dilution is stable over a period of months. With this material, reactions due to protein substances other than toxin are somewhat commoner and more difficult of interpretation. It is particularly important that in this test a control solution be used which employs toxin *in the same diluent* which has been heated 75 degrees to 80 degrees centigrade for five to ten minutes. It is obviously incorrect to use as a control the heated solution of toxin in saline which is used for the ordinary Schick test.

The interpretation of Schick tests performed with this solution requires somewhat more experience than the ordinary method; and, as stated above, it is not advocated for routine use at present. Reactions should be first inspected forty-eight hours after injection rather than at seventy-two hours.

Refractory Group.—A small percentage of individuals are refractory to immunization. Such cases may fail to develop immunity after several courses of immunizing injections. Immunizing procedures must be individualized for these, and they may be tried on several series of varying dosage, using toxoid and toxin-antitoxin. It may be impossible finally to immunize them. No reliance can be placed in a hypothesis that they are protected by a partial immunity, and they should be told that they are susceptible.

Duration of Immunity.—When immunity has been artificially produced and demonstrated by a Schick test, it is justifiable to assume that protection will last for several years; it probably usually lasts for life and will at least serve to protect the child through the early years of greatest susceptibility and highest mortality. The method does not interfere with the development of natural immunity which, with the passage of time, serves to enhance the immunity.

Prophylactic Use of Diphtheria Antitoxin.—This is seldom to be advised. It is much better policy to isolate cases of the disease from all contacts, determine the susceptibility of contacts by Schick tests and promptly culture the throats of all contacts. Generally speaking, it is just as efficacious under these conditions to administer antitoxin at the first symptom of the disease as it is to give antitoxin prophylactically to everyone exposed. The disadvantage of antitoxin for prophylaxis is that it commonly produces the unpleasant symptoms of serum disease and results in immunity for only a short and variable period of not more than three weeks. This use of antitoxin sometimes leads to a false sense of security, in that if exposure continues longer than the period of protection conferred by antitoxin, the disease may develop. The chief use of antitoxin for this purpose is in families where economic and social conditions make it impossible properly to isolate cases and observe contacts. Under these circumstances antitoxin may be administered with some increase in safety but must not be relied upon for too long a time.

Upon determining the advisability of administering antitoxin, the usual precautions regarding horse serum injections should be observed. A careful search of the history should be made for factors which suggest the probability of reactions. Especially significant in this respect are the following: (1) A history of horse asthma or of similar response to horse emanations. (2) A history of reaction to previous serum injections. (3) Previous injections of horse serum may be productive of hypersensitiveness but do not always do so. Repeated injections of small amounts of serum, as is the case in toxin-antitoxin administration, is especially apt to sensitize. (4) An allergic history, attacks of asthma, hay fever, eczema, hives, etc., should be regarded as suspicious.

When the history reveals any suspicious items, the patient should be tested for cutaneous hypersensitiveness. Such tests are a wholesome routine in any case even when there is no particular reason to susceptibility. This test consists of the introduction of one-tenth cubic centimeter of a 1-10 dilution of the antitoxin in saline intracutaneously. Cutaneous hypersensitiveness, which *usually* accompanies general hypersensitiveness, is indicated by the appearance of a wheal, surrounded by a zone of erythema, which appears in five to thirty minutes. The amount of reaction is roughly proportionate to the degree of hypersensitiveness.

In the presence of suspicious history or a positive skin reaction the patient should be given an initially small dose of serum subcutaneously which in marked cases should be diluted 1-100 or in extreme cases 1-1000 with saline. Judging by the amount of local reaction, subsequent doses given at intervals of from thirty to forty minutes should be increased until the full dose is given. It may prove feasible to give the dose in two injections, or it may seem advisable to give several small doses before the final full dose. It must be admitted that the danger of reaction is not great, and some clinicians dispense with all such precautions. Desensitization does not prevent the occurrence of later serum disease.

The prophylactic dose should always be given subcutaneously, as this is somewhat safer and permits longer retention of the serum in the patient.

All horse serum should be given into an extremity in such a location that rapid absorption can be impeded, if an immediate reaction ensues, by the application of a tourniquet proximal to the site of injection. *Epinephrin solution,* 1-1000 *should always be in readiness* for immediate use if a reaction occurs and should be used in such dosage as to produce a definite physiological effect, blanching of the lips, etc.

Late Reaction.—Serum disease very commonly occurs after antitoxin is given. This occurs at from three days to one, two or three weeks after the injection. It cannot be prevented by any precautions at the time of injection. Patients should be told of the probability of its occurrence. The urticaria, glandular and joint swellings, etc., which characterize late serum disease are treated by local soothing applications and by the use of epinephrin solution intramuscularly.

SCARLET FEVER

Immunization with toxin of the scarlet fever streptococcus as a means of protection against scarlet fever has been proposed and to a considerable degree carried out. There is as yet, however, no absolute unanimity of opinion regarding the dosage of toxin, the degree and duration of immunity produced. In fact it can be confidently stated that scarlet fever immunization is not the answer to the scarlet fever problem to a degree

in any way comparable to the case of diphtheria immunization. The situation is further clarified in California by the fact that the prevalent scarlet fever is not of great severity, nor have epidemics in recent years constituted a very great problem.

It seems proper to advise that scarlet fever immunization be not advocated as general routine at this time. It should be emphatically stated that unless any immunization procedure for general use can be defended on the grounds of *harmlessness, effectiveness* and *necessity* its use should be limited to experimental studies or to the individual case in which it may seem particularly advisable. It should be remembered that a campaign of prophylaxis which cannot be defended on these grounds would tend to discredit other procedures of proven great value. (Immunization of staff and personnel is carried on in some communicable disease hospitals which select their own procedure.)

Prophylactic use of scarlet fever antiserum is not particularly to be advised inasmuch as serum reactions seem commonly to be disturbing, and the duration and effectiveness of immunity produced is not even as satisfactory as in the case of diphtheria. In consideration of the low communicability of scarlet fever, isolation is the best prophylaxis; and in cases where protection is of momentous importance, the blood of a recent convalescent is to be thought of.

TYPHOID FEVER

In most urban communities in California, and in many rural ones, the risk of acquiring typhoid through an infected water supply is practically nil. Most cases are produced by healthy carriers of infection who chance to infect food supplies. Statistically the risk of typhoid infection may be shown to be very slight in this state. It therefore seems wise to advocate that typhoid immunization should not be recommended for universal application, but that its use be restricted to those whose work brings them in contact with infected cases; for example, doctors and nurses, or those who are to travel in a region in which the risk of typhoid is appreciably increased. It should be particularly advised for those contemplating European or Oriental travel.

Method.—Immunization against typhoid fever may be carried out singly or in combination with the A and B paratyphoid organisms. The latter procedure would seem to be preferable, since the risk from other enteric infections is proportionate to that of typhoid. The bacterial vaccine used for immunization consists of a suspension of heat-killed or chemically-killed typhoid and paratyphoid organisms. The usual mixture contains 500,000,000 typhoid bacilli and 250,000,000 each of the Para A and Para B organisms per cubic centimeter. The vaccine injections should preferably be given at intervals of one week, the first dose consisting of one-half cubic centimeter, and the second and third doses consisting of one cubic centimeter each. It is possible to hurry the procedure by giving injections five days apart, but the week interval is preferable. Similarly it is permissible to give injections at slightly longer intervals than a week, and no adverse effect is produced if injections are given two or three weeks apart.

Dosage for children should be slightly reduced but need not be reduced in direct proportion to age, as young children tolerate relatively larger doses of vaccine well.

Duration of Immunity.—The duration of typhoid immunity after typhoid immunization is uncertain and cannot be tested by any laboratory procedure; it should be repeated after an interval of two or three years, if it is to be relied upon.

WHOOPING COUGH

Whooping cough is a communicable disease, the seriousness of which is frequently not appreciated. It commonly results in seriously impaired nutrition, its immediate complications are of great seriousness, and it lets down the bars for continued chronic infections which may follow in its wake. It is most serious in younger individuals, and susceptibility is present from birth onward.

Vaccine.—The only attempt at the production of specific immunity in this disease is by means of whooping cough vaccine. The value of this agent is still uncertain, and its protective and therapeutic value is difficult to prove. There are, however, a few observations which point so convincingly to the value of this procedure, in certain well controlled experiments, that, because of the seriousness of the disease and the fact that we have at our command no other agent for specific immunization, the use of vaccine may be recommended. It should be proposed, however, only as the best but still unsatisfactory method of prevention of a very serious disease.

Whooping cough vaccine consists of a suspension of B. pertussis in normal salt solution killed by heat or chemicals. The suspension is usually a heavy one containing from five to ten billion organisms per cubic centimeter, and such vaccines are commonly preferred to weaker ones. There is some evidence to show that freshly prepared vaccines have greater immunizing value. The vaccine is usually given at intervals of from two to four days. Successive doses consist of 0.25 0.5, 1.0 and 1.5 cubic centimeters. In case a reaction is produced, the dose is diminished or not increased at the next injection.

Many types of vaccine are in the process of development and their introduction may be awaited with interest. There can be little doubt that vaccines produced from freshly isolated clinical stains grown on human blood media have distinct antigenic advantages.

Indications.—The immunity produced by vaccination is of uncertain duration, and prophylactic immunization should therefore be restricted to those who are known to have been exposed.

Treatment.—The treatment of whooping cough in its early stages may be undertaken by the use of pertussis vaccine in a manner similar to prophylactic vaccination.

Reactions.—As a general rule little reaction is produced by injections of whooping cough vaccine. Occasionally, however, the vaccine contains a large amount of blood which has been washed from the media, upon which the organisms are grown, and this will occasionally be productive of reactions in the sensitive individual. It is advantageous on this account to select a vaccine which contains little or no blood.

MEASLES

There exists no method for active protection against measles. The disease may be prevented by passive protection conferred by an injection of blood serum of a recent convalescent from the disease, or by the injection of the blood or blood serum of most adults (who have had the disease earlier in life).

Convalescent Serum.—Human blood serum taken one to three weeks after the fever has subsided in an attack of measles contains very powerful protective substances against the disease. Such blood may be withdrawn, the serum separated aseptically from the clot and stored in sterile containers, with or without the addition of a preservative at ice-box temperature, for a period of several months. Pooling serum is advantageous. If such serum is given immediately following exposure even in relatively small doses subcutaneously, it will usually completely protect against the disease or greatly lessen its severity. If similar doses are given five to six days after exposure, partial protection is produced and the patient develops measles, which is usually of a very mild form, accompanied by little or no fever, an atypical rash and mild respiratory symptoms. As the interval after exposure increases larger doses are necessary to produce any protection, and after the seventh day following exposure attenuation of the disease is usually not demonstrated with the use of comparatively large amounts of serum.

In most children results are secured by using three to seven (usually five) cubic centimeters of serum for the first to fifth day following exposure, or by using ten to fifteen cubic centimeters on the fifth to seventh day inclusive. After the seventh day little can be expected even with much larger doses.

Adult Blood.—Most adults have had measles at some period in their life and the blood of most of these contains substances capable of exerting a protective power similar to that afforded by the serum of a recent convalescent. It was thus suggested, as a convenient method for protection of children following exposure, that the blood of either parent or of children several years after attack might be injected. For this purpose the blood is drawn aseptically (small amounts of sterile sodium citrate solution may preferably be introduced into the syringe to facilitate handling and absorption of the blood) and the whole blood is injected intramuscularly into the patient whom it is desired to protect. Immune substances are only presumptively present, as the amount of circulating antibodies varies greatly in those who have previously had the disease. Somewhat larger amounts of this "normal" blood must be used in order to secure the effect of convalescent serum. It is usually more convenient to inject the whole blood than to carry out the procedure necessary for the separation of serum. When the blood of a parent is used for protection, it is usually possible to judge whether or not it is safe to inject this without a preliminary Wassermann test. From twenty to forty cubic centimeters of "normal" whole blood produces effects comparable to the smaller doses of convalescent serum. It is sometimes forgotten that children who have had a transfusion in the course of an acute infection (mastoiditis, etc.) are usually protected if exposure to measles ensues in less than three weeks.

Utility.—Prophylaxis against measles is not to be recommended in every child who has been exposed. The protection conferred is not of long duration; the duration of protection is, however, distinctly longer than that conferred by prophylactic injections of animal antiserums which are excreted in a period of two or three weeks. The antibodies contained in human blood serum have been shown to persist as long as six weeks or more after injection, but three weeks after injection modification rather than prevention is to be expected.

It should be remembered that measles practically does not occur in children under six months of age. Complete protection may be sought in the case of infants of from six months to two years of age, or in those suffering from other forms of illness, especially tuberculosis and other respiratory infections, and in those whose physical condition makes it desirable to postpone an attack. The method finds especial usefulness in institutions into which the disease has been introduced.

Immunity After Modified Measles.—It seems logical to expect that if convalescent serum or adult blood were given after exposure, at such a time and in such dosage that modified measles resulted, that the patient would remain permanently immune to the disease. Actual proof of this is lacking, however, and it is hardly safe to assure the patient of such immunity on purely theoretical grounds.

SMALLPOX VACCINATION

Vaccination against smallpox should be advocated for every child at an early age. During epidemics of the disease it may be carried out at any age, but as a general routine it should be done at from six to twelve months of age. Vaccination at the first birthday may be adopted as a safe rule.

By vaccination, early protection is conferred on the young, and it is particularly noteworthy that certain dangers incident to vaccination are minimal in the very young.

Simultaneous Administration of Toxoid and Vaccination.—It is perfectly feasible to combine the procedures of immunization against smallpox and diphtheria. This saves time and extra trips to the doctor's office, introduces no added hazard, and at least hypothetically may decrease the risk of vaccinal complications.

The following routine is convenient at one year of age:

First visit	Vaccination	½ c.c. toxoid
1 week later	Dress vaccination	.....
1 week later	Dress vaccination	1 c.c. toxoid
2 weeks later	Inspect vaccination and make appointment for Schick test	1 c.c. toxoid
6 months later		Schick test

Material.—Any commercial glycerinated vaccine is used. A record should be kept of the lot number of the vaccine.

Location.—Vaccination is more safely done on the arm. The preferable site is the inner aspect of the arm at the junction of the lower and middle thirds. Here the pustule is protected from trauma, and resultant scars are inconspicuous.

Leg vaccinations should be discouraged; they uniformly cause more trouble. Secondary infections are somewhat more common, and they are rendered more hazardous by the fact that muscular movements of the leg are harder to prevent and result in more risk of the dissemination of pyogenic infection.

Preparation.—The site should be thoroughly washed with soap and water, scrubbed with 95 per cent alcohol, and quickly dried with ether.

Multiple Pressure Method.—A drop of virus is placed in the center of the cleansed area; then, holding a small sterile needle parallel to the skin surface, the needle is quickly stroked against the skin through the drop of virus. About ten to fifteen strokes are enough. The excess of virus may be wiped off with sterile gauze.

It is important, in the prevention of all adverse effects of vaccination, that the vaccine virus be applied to a very small scarification. Instead of using the multiple pressure method, a minute scratch not over one-eighth inch long may be made with a needle. A scarification one-eighth inch in diameter may be made with a chisel as an alternative. It is never permissible to apply any species of cross-hatching with the needle, nor to make a large area of scarification in any manner. Multiple vaccinations are unnecessary and undesirable.

Dressings.—It is permissible to apply no dressing. Tight, constricting dressings, shields, etc., should be sedulously avoided: two or three thicknesses of sterile gauze may be placed over the site and lightly affixed with adhesive in such a way that no constriction of the arm is produced. This serves to prevent scratching and contamination with fingers and clothing, and is advisable.

Inspection.—First vaccinations should be inspected after one week, at which failures or successful "takes" are noted. Failures should be promptly revaccinated. There is, of course, no protection from vaccination unless there is an evident "take." It is nearly always possible to produce successful vaccinations, even if several trials are necessitated. Failures are nearly always occasioned by inert virus and this loss of potency is usually due to storage at improper temperatures. At the first inspection the pustule is cleansed with ether, and may desirably be painted with one of the mildly antiseptic dyes (Berwick's dye, gentian violet, or mercurochrome), to minimize secondary pyogenic infection. Healing is nearly complete two weeks after vaccination.

Revaccination.—Children vaccinated at one year should be revaccinated when they enter school. Vaccination should be repeated during epidemics in those who have not been successfully vaccinated within three years. Revaccination should be repeated at similar periods, if the danger of smallpox is for any reason increased—as by Oriental travel.

Revaccinations should be inspected after an interval of forty-eight hours for evidence of an immunity response. This consists of a reddened and, usually, an inflamed papule at the vaccination site, which reaches its height in from forty-eight to seventy-two hours, itches greatly and has largely subsided at the end of a week. This is evidence of immunity.

POLIOMYELITIS

The use of convalescent serum or of "normal" (immune?) serum has been proposed for passive protection against poliomyelitis during epidemics. This is not, in general, to be recommended. The utility of this method is doubtful and hard to evaluate, the risk of acquiring the disease is statistically small, and available serum, which is hard to procure, should be reserved for treatment of early cases where results may be studied and evaluated.

MENINGITIS

No method or passive protection can be advocated for this disease. Vaccines are of doubtful value, and it is difficult to control their specificity. Antimeningococcus horse serum should not be given for passive protection.

MUMPS—CHICKENPOX

Blood serum from recent convalescents may be given for protection against these infections where there is need of prophylaxis. This necessity is uncommon because of the mildness of infection, and it is practically limited to institutions.

TETANUS

Tetanus Antitoxin should be used prophylactically in all cases in which there is danger of contamination of a wound with horse manure or with human excreta. It is particularly indicated in puncture wounds—those about the head and those in which there is pyogenic infection or much necrotic tissue. When tetanus antitoxin is thought to be advisable, the same precaution employed in the prophylactic administration of diphtheria antitoxin is to be observed with regard to history, test and method. Prophylactic dose is 1500 units and should be given *subcutaneously.*

Like any foreign protein, tetanus antitoxin is eliminated from the patient's body in two or three weeks; and therefore because of the frequency with which the incubation period of tetanus is prolonged, serum must be repeated at the end of this time if protection is to be relied upon. The repetition of serum is particularly desirable if there is pyogenic infection or if operative pro-

cedures are to be carried out in the infected area even after a long period of time. Antitoxin should be repeated with especial observance of the initial precautions, but undue apprehension regarding reactions is not justified.

384 Post Street.

DISCUSSION

WILLIAM PALMER LUCAS, M. D. (490 Post Street, San Francisco.)—I feel that this carefully detailed report on specific prophylaxis is especially timely and will be heartily welcomed by the profession. It is conservative, practical and up to date on method.

The discussion on diphtheria immunization for older patients should be noted, since reactions from toxoid are fairly common in adolescents and young adults.

The importance of technique in doing Schick tests should be stressed to insure accurate information on results. Cases with repeatedly positive Schicks should be studied individually.

Every practitioner in the state should make vaccination and immunization of every child he sees a routine measure.

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CLIFFORD SWEET, M. D. (242 Moss Avenue, Oakland).—I have but little to add to the above recommendations in the way of discussion. I was present when they were discussed in the Pediatric Section at the last meeting of the California Medical Association and made some suggestions at that time. I most heartily commend the carrying out of these methods by every physician who treats children as patients. The immunization of all children at one year of age against diphtheria is of very great importance, and the number who are protected in this manner will increase in proportion to the number of physicians who, with conviction and enthusiasm, advise that it be done. Every child who is immunized should be subjected to the Schick or Kellogg test afterward. The nonimmune child, who lives and plays with immune companions who may at any time become carriers, is in greater danger than he would be in a group of nonimmune children.

Smallpox vaccination may be done before six months of age with even less likelihood of reaction than at one year. There are no disadvantages connected with doing it at the earlier age.

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W. H. KELLOGG, M. D. (Bureau of Laboratories, Berkeley).—The article on Immunization Procedures by Doctors Shaw, Dietrich and McCleave which has been given the stamp of approval by the section on pedriatics of the California Medical Association is an authoritative discussion of the immunization procedures that form such an important part of the practice of preventive medicine.

The practice of medicine may theoretically be segregated under two main headings—curative medicine and preventive medicine. Such a division is necessary in the allocation of appropriate duties to the public health officer, but no such distinction should be made by the general practitioner. His field includes all, except, of course, the enforcement of the laws which especially charge the health officer with duties of quarantine and other mass measures. It is not only the privilege, it is the duty of doctors to practice preventive medicine to the full extent made possible by the personal relationship existing between physician and patient. The degree to which the general practitioner accepts this responsibility and avails himself of his opportunities in this field will be the measure of the assumption of activities by official health departments beyond the basic essentials of public health.

In many communities the doctor is not doing his part, and the official agencies are not only encouraged, but they are obliged to engage in activities for the public good that should form a pleasant and lucrative division of general practice. The reason for this situation is an all too prevalent lethargy with respect to progress in the field of prevention, with perhaps a tincture of false dignity with respect to perfectly proper "go getter" methods in building up a preventive practice.

The most common shortcomings of the general practitioner with respect to immunization may be summed up as follows:

1. A tendency to consider it unimportant as a division of practice.
2. To consider it unimportant to the individual; he can receive protection when epidemics threaten.
3. Neglect in keeping informed on the progress of immunology, as a consequence of which faulty advice is given and antiquated methods used.
4. An inertia that leaves this field to the public health officer with perhaps at the same time a feeling that the health officer is overstepping the bounds of his appropriate activities.

This article should go far toward arousing interest in specific prevention, and will be of the utmost value in providing in condensed form authoritative information regarding methods and the usefulness and limitations of biologic procedures in the practice of medicine. It is to be hoped that the article will be reprinted and given wide circulation.

COLD QUARTZ ULTRAVIOLET LIGHT THERAPY IN UROLOGY*

By J. C. NEGLEY, M. D.
Los Angeles

RESEARCH into ultraviolet energy has shown therapeutic properties reside in a form of radiation whose penetration is slight. Sources[1,2] are the sun, carbon arc lamps, cold quartz mercury vapor lamps, incandescent bulbs, Edison carbon filament, tungsten bulb, gas bulb, magnetite arc, water-cooled and air-cooled lamps.

To physicians devoting their entire time to tuberculosis or skin diseases, we owe most of the technique and enthusiasm over ultraviolet light therapy. Obviously, apparatus suitable for body irradiation could not be well used in organs of the genito-urinary system. Within a comparatively recent time, apparatus has been devised making direct or indirect treatment of these organs possible.

PHYSICAL CHARACTERISTICS

As with radium and roentgen ray, ultraviolet light is part of the spectrum of radiant energy comprising that portion of the spectrum with wave lengths approximately between 1000 and 4000 A. u. This is situated next to the violet zone. The ultraviolet spectrum from a quartz lamp consists of wave lengths between 3800 and 2000 A. u., and further divided into near ultraviolet from 3000 to 4000 A. u., and the far ultraviolet from 2000 to 3000 A. u.—the near rays having comparatively greater penetration, and the far rays less penetration but more biologic potency. Also, the shorter wave lengths exert specific photochemical action. In a physical sense, longer wave lengths produce molecular vibration and heat; shorter rays display an electronic action similar to that of roentgen rays, with resultant chemical and biologic reactions before the residual fraction of energy is transformed into heat. Living tissue is only affected by the portion of energy absorbed

* Chairman's address, Urology Section of the California Medical Association. Read at the sixty-second annual session at Del Monte, April 24-27, 1933.

into it. Incident intensity of ultraviolet rays is greatest where they strike the surface at right angles. The amount reflected is increased in proportion as the incident ray assumes a direction less than 90 degrees. This loss by reflection is an important clinical consideration. The degree [3] of penetration of light of various wave lengths into mucous membranes is not definitely known, but recent investigations have proved these rays to be more penetrating than hitherto supposed. The positive and undeniable clinical results with ultraviolet irradiations cannot be reasonably explained, except on the assumption that they penetrate deeply enough to affect at least the capillary circulation. Transmission of light, regardless of color or wave length, is always accompanied by a certain amount of absorption which may be of two kinds: (1) General, which is almost the same for all wave lengths; (2) Selective, in which absorption of certain wave lengths is greater than that of others. Only the radiation that is absorbed can affect chemical change.

BIOLOGIC ACTION

After exposure to ultraviolet light manifold visible and invisible changes occur, their onset more or less related to intensity and length of exposure. Short exposures bring on an abnormal sensitivity, vasodilatation, hyperemia, slight edema, and stimulation of cell nutrition. Long exposures may bring on intensive inflammatory reaction, prolonged hyperemia, occasionally urticaria, marked edema, elevation of local temperature, and in some cases a definite burn.

Microscopic changes are manifest by vascular dilatation, congestion, edema, thickening of basement cells. Sensitiveness of cells to the ultraviolet energy is proportionate to their immaturity and differentiation. Apparently it is somewhat similar to roentgen rays and gamma rays in which young or undifferentiated cells are more susceptible than adult or highly differentiated ones. Bactericidal [4] power of ultraviolet is a recognized fact and roughly coincides with the absorption spectrum of bacteria. It has been found that the bacterial absorption sensitivity coincides closely with the curve of absorption sensitivity of egg albumin and human or animal serum. Only the light absorbed produces a chemical effect,[5] supposedly due to protoplasm coagulation similar to that produced by heat. Many views are expressed that the germicidal action extends from the short rays up to and including 3650 A. u., with the shortest rays having the most violent lethal action. It has been determined that ultraviolet is bactericidal to tubercle bacilli [6] after an exposure of from three to five minutes, from 5 to 10 inches from the burner. Tubercle bacilli [6] *in vitro* were completely sterilized by exposure of one to one and one-half hours by either a carbon arc lamp or mercury vapor lamp. These experiments were verified by guinea-pig tests. Theoretically, ultraviolet radiation kills all pathogenic organisms on the surface,[7] and the penetration of the longer wave lengths may be beneficial to the protective mechanism. There is, however, no direct evidence to show that organisms not on the surface can be affected by rays of wave lengths known to possess powerful bactericidal action. But even if the bactericidal action is clinically mild the inflammatory reaction resulting from the production of hyperemia is effective in curing infectious diseases. The therapeutic benefit of ultraviolet depends also on its influence on calcium, iron and phosphorus metabolism. The stimulating action of light on growth and development of plants and animals is of general cognizance.

GENERAL TECHNIQUE AND DOSAGE

Quantitative measurements of ultraviolet output from therapeutic apparatus lack uniformity and completeness. Many excellent reports from scientists are complicated and incomprehensible to clinicians and involve conditions and conclusions not encountered in practice. The commercial literature of the manufacturers of therapeutic lamps abounds in conflicting statements; and like many other kinds of physicians' equipment, therapeutic lamps are manufactured from a scientific and sales value standpoint rather than from a study of the needs of the clinicians using them. The sensitiveness of each patient to the action [8, 9] of the rays must govern our dosage. Individual toleration to ultraviolet light is variable. With the older types of therapeutic light, *i. e.*, the air-cooled and Kromayer or water-cooled light with their various applicators, no very rapid reactions were encountered, but with the advent of the newer mercury vapor lamps with orificial applicators the entire field has been opened again for this very valuable aid in the treatment of many conditions.

PROSTATE, VESICLES, AND BASE OF BLADDER

The technique for treatment of prostate, vesicles, and base of bladder is as follows:

1. Insert the quartz test-tube speculum in rectum.
2. Place orificial electrode within speculum and expose for twenty seconds.
3. Increase ten seconds daily until the manufacturer's limit of one and one-half minutes is reached. I have many times reached a limit of from three to five minutes, sometimes with pleasure, sometimes with regret and apprehension.
4. The number of treatments is limited only by the tolerance of the patient and the opportunities for their application.
5. Treatments should be discontinued under following conditions: burning in rectum, diarrhea, continuous desire to defecate or urinate, increased frequency in urination, pain (local or general), fever, malaise, nervousness, tachycardia or when any other signs of local or systemic reactions, real or fancied, occur.

The treatment of urethra in male or female consists in placing the orificial electrode within the urethra, beginning exposure with ten seconds and increasing ten seconds daily to one and one-half minutes, although longer periods may be used with caution.

The treatment of the vagina and cervix consists of use of quartz glass test-tube speculum with electrode within it; but in cases of pure cervicitis the bare electrode may be placed directly in the

cervix, and the twenty seconds initial and ten seconds daily increase used to one and one-half minutes limit.

The treatment of surgical wounds and of surface conditions such as chancroids and ulcers can be done with so-called body lamp or by direct application of orificial electrode to wound or sinus. Begin with thirty seconds, increase ten seconds daily to three minutes.

The treatment directed to the interior of the bladder presents many obvious difficulties, as noted below:

1. On account of the rounded contour of a filled bladder it is obvious that the lamp must be at a varying distance from different points of the bladder, and this factor influences greatly the time of exposure and the intensity of the rays.

2. An empty bladder presents difficulties because of its many folds which might cover the involved area to such an extent that the rays would not reach the lesion. Direct contact with bladder walls might produce a burn.

3. Any chemical substance previously introduced for distention purposes may, under the influence of the rays, undergo enough chemical change to produce profound irritation. Substances such as eosin, neutroflavine, gentian violet, and others have been used to distend the bladder, with the assumption that their refractile properties increased the intensity of the light. This has later been disproved. Distilled water and air are now the media of choice, although urologists are aware of the danger of air distention.

TECHNIQUE FOR BLADDER TREATMENT IN WOMEN

1. The bladder is comfortably filled with sterile distilled water.

2. The orificial electrode is introduced through the urethra and placed as near the lesions as possible without actual visualization; with exposure for twenty seconds interval, this to be repeated daily with a ten-second increase until one and one-half minutes has been reached.

3. To protect the urethra with which the electrode is in direct contact, some clinicians coat over all but about the terminal two or three inches of the electrode with green to yellow lacquer.

4. Burning, tenesmus, urgency, frequency, dysuria, are a signal for discontinuation of treatments for a time.

REPORT ON CASES

As to actual use of this agent, some 2,345 treatments have been given to 197 patients who were suffering from the following pathologic conditions:

Bladder tuberculosis (women)	8
Prostate and vesicle tuberculosis	51
Prostate and vesicle (gonorrhea)	16
Prostate and vesicle (pyogenic infection)	11
Surgical wounds (tuberculous or pyogenic)	36
Urethritis (gonorrheal—men, 4; women, 14)	18
Urethritis (nonspecific—male)	11
Endocervicitis (gonorrheal or postgonorrheal)	10
Incontinence (in male after bladder-neck surgery)	4
Impotency	6
Chancroids, ulcers, incised abscesses, and surface lesions	26

The above patients were under my personal supervision at the Los Angeles General Hospital, Olive View Sanitarium, and in private practice. Some of these patients also had the usual treatments in addition to light therapy. Patients who receive less than seven treatments are not included. The greatest number of treatments in any one individual was 174, these being given for tuberculosis of prostate, vesicles and prostatic urethra, including the veru montanum.

COMMENT

From this rather small series of cases the following observations may be drawn:

1. Patients with urinary bladder tuberculosis are more rapidly relieved of distressing symptoms than by other methods. Ulcers, tubercles, and other lesions show marked improvement, but as yet I have observed no permanent cure.

2. Prostate and vesicle tuberculosis is markedly improved both as to symptoms and clinical pathological findings, but as yet I have observed no complete or permanent cures.

3. Prostate and vesicle pathology of a chronic indolent type, either from gonorrhea or pyogenic infection, are all benefited and in some cases completely and permanently cured.

4. Endocervicitis, either gonorrheal or postgonorrheal, is so markedly benefited that in many patients other forms of treatment may be dispensed with.

5. Slow-healing surgical wounds, whether tuberculous or otherwise, are so benefited that recovery time is decreased by 65 or 70 per cent.

6. Chancroids, ulcers, incised abscesses, buboes, and other surface lesions of external genitals respond so quickly and permanently that other forms of treatment might be dispensed with if it were not for the comfort derived from wet dressings.

UNFAVORABLE CASES

1. Acute urethritis from gonorrhea or other infections in men do not respond well, and in many cases if this light therapy is used, are aggravated to an alarming degree, as evidenced by phimosis, edema, and possible abscess. In all fairness to the method, my opinion is that many of these distressing results are due to the trauma incident to the introduction of the cumbersome, awkward, unwieldy urethral electrodes with which we are now supplied.

2. Acute fulminating inflammatory or abscess processes in the prostate, vesicles or elsewhere, which have not had drainage established by natural channels or surgery, had better be treated by other methods. Two cases of serious aggravation of prostatitis, with subsequent fibrosis sufficient to interfere with urination (I believe permanently), have led me to this observation.

3. Incontinence following surgery of bladder-neck obstruction are conditions which do not seem to be materially influenced for better or worse, regardless of the number of treatments.

4. Impotency from any cause does not seem materially benefited from local treatment.

5. Application of this method to diagnosed or undiagnosed malignancy may lead to more rapid growth and to an increase in the degree of malignancy.

6. Treatment of the posterior urethra and bladder, with the glass electrodes now furnished, is for obvious reasons fraught with danger.

7. Soft infiltrations, keloid-like formations, fibrosis and burns may follow overexposure.

CONCLUSIONS

1. Cold quartz ultraviolet light therapy in urology is not a "cure-all"; is not a panacea or an answer to the urologist's prayers, but is a useful, valuable adjunct to our present methods of treatment.

2. Only by intelligent application and observation of a large number of cases by many workers can the true value of this method be ascertained.

3. The author of this paper has now in contemplation apparatus that will enable us to safely treat the interior of the male bladder; also apparatus by which the ureter, kidney pelvis and calyces may be safely treated.

4. Preliminary ultraviolet irradiation of medicinal substances (inorganic preferably, such as mineral oil), and then injection of this substance into the inflamed bladder, offers a possibility of therapeutic results.

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DIVERTICULOSIS OF THE DUODENUM*

By KENNETH S. DAVIS, M. D.
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DISCUSSION *by John D. Lawson, M. D., Woodland; Milton J. Geyman, M. D., Santa Barbara; Carl H. Parker, M. D., Pasadena.*

DIVERTICULOSIS of the duodenum is not an uncommon finding in the routine gastro-intestinal examination, but seldom gives positive clinical manifestations of its presence. A study of the frequency of this condition shows a considerable variation in reports from different sources.

Based on the roentgenologic examination, Case [3] reports eighty-five cases of diverticulosis in 6,847 patients; Andrews,[1] 26 in 2,200 patients; Spriggs,[15] 10 in 1,000 examinations; Penhallow,[14] 11 in 2,200; Larimore and Graham,[8] 19 in 3,446, and Heacock,[5] 14 in 1,540 examinations. In the roentgen ray laboratory at St. Vincent's Hospital we have had twenty-four cases of duodenal diverticulosis in 2,503 consecutive gastro-intestinal studies. This gives a total of 189 cases of diverticulosis in 19,736 examinations, or approximately one per cent.

The statistics, quoted from autopsy records, give a total of 83 diverticula in 2,617 examinations, or a percentage of 3.2. This difference in the incidence would indicate that the roentgenologist is overlooking about two out of every three cases of diverticulosis.

HISTORICAL

Chomel, in 1710, is credited with the first description of a diverticulum from the duodenum, although this may have been a dilated ampulla of Vater, as it contained twenty-two gall-stones. Morgagni in 1761, Rahn in 1796, and Fleishman in 1815, described cases found postmortem. Up to 1908 less than one hundred cases of duodenal diverticula had been recorded.

In 1913 J. T. Case first demonstrated cases of duodenal diverticulosis diagnosed during life by means of the opaque meal. In 1915 Forsel and Keys diagnosed a case of duodenal diverticulum by the x-rays and confirmed their findings at operation.

CLASSIFICATION

Odgers [12] divides diverticula of the duodenum into:

1. *Primary diverticula,* in which there is no obvious cause for the appearance of the diverticulum;

2. *Secondary or acquired diverticula,* usually caused by duodenal ulcer or by adhesions from the gall-bladder or neighboring viscera. These diverticula are almost always found in the first portion of the duodenum, and in the autopsy room

* From the x-ray laboratory of St. Vincent's Hospital, Los Angeles.

* Read before the Radiology Section of the California Medical Association at the sixty-first annual session at Pasadena, May 2-5, 1932.

are seen to have a complete muscular coat. Rarely a secondary pulsion diverticulum will be found.

3. *Dilated ampulla of Vater.*

PRIMARY DIVERTICULA

Diverticula in this group are characterized: By their location, being found only in the second, third, and fourth portions of the duodenum; by the fact that they always grow out from the concave border of the bowel; they are usually in relation to the pancreas; typically they are flask-shaped protrusions of the mucous membrane through the muscular coats of the bowel wall and communicate with the lumen of the bowel through a constricted neck; they are found best developed in persons over fifty years of age; more than one diverticulum may be present.

Primary diverticula vary considerably in size, from one-half to five centimeters in depth; they also vary in shape, but the majority have an expanded fundus narrowing to a neck which opens by an orifice of varying size into the bowel. The sacs are usually collapsed and empty when found in the autopsy room, but may be filled with chyme or food. The walls of the pouch are made up of mucous membrane, muscularis mucosa, and a thin submucosa layer. The muscle stops abruptly at the neck of the sac.

ETIOLOGY

Herbst [6] quotes ten theories to explain the production of primary diverticula: chief among these is the congenital theory, in which the diverticula are thought to be abortive attempts to form supernumerary pancreases, or that the pancreatic anlages cause local defects in the musculature, with pouching occurring with age and increase in duodenal pressure. Nagel [11] states that "whatever the time or cause of their appearance, these diverticula are formed on a developmental basis, as they occur at actual or potential weak spots in the bowel wall." Odgers [12] states: "In any case the pouches are probably due to congenital *loci resistentiæ minoris*. At certain periods the mucous membrane has pierced possibly only partially the muscular wall, and at these spots normal wear and tear will produce pulsion diverticula." Odgers was able to demonstrate potential diverticula in the embryo, this consisting of marked activity of the duodenal epithelium, which proliferates so quickly that the lumen of the bowel is occupied by a series of vacuoles, some of which produce outward bulgings into the surrounding mesenchyme.

Duodenal ulcer plays an important part in the etiology of secondary diverticula. Robertson and Hargis [6] measured the distance between the pylorus and the ampulla of Vater in a large series of cases. They found that the distance was shortened by several centimeters in cases of duodenal ulcer with scars. Since most duodenal ulcers are located on the anterosuperior border of the duodenum, most of the shortening takes place along this border, leaving the inferior border redundant and a favorable location for the formation of a secondary diverticulum.

PATHOLOGY

In the majority of cases primary diverticula are found as empty sacs lying in a bed of areolar tissue in relation to the head of the pancreas. They have a comparative immunity from inflammation due to the sterility of the duodenal contents. Diverticulitis has been reported in several instances with or without perforation. Peridiverticulitis has been noted by Case and Maclean,[10] this consisting of adhesions. Gall-stones: several cases of gall-stones in the common duct, associated with a diverticulum near the ampulla of Vater, are on record. One of the cases in my series is of this type.

SYMPTOMS

The great majority of diverticula of the duodenum give rise to no symptoms and are discovered only in the gastro-intestinal examination or in the autopsy room. Even with a definite diverticulitis present there are no specific signs or symptoms which are pathognomonic of these pouches. In a case reported by Hunt and Herbst [7] the symptoms and x-ray findings were those of pyloric obstruction. At operation a tumor, involving the entire circumference of the pylorus, was found which proved to be a dissecting diverticulum communicating with the gall-bladder, and was packed with gall-stones. In the majority of the cases of duodenal diverticulitis the symptoms simulate duodenal ulcer or gall-bladder disease. In the "ulcer" type there is epigastric pain and tenderness, vomiting, sour stomach, heart burn, and flatulence. The "gall-bladder" type are usually found in diverticula near the ampulla of Vater. Symptoms in this type of case are those of jaundice and biliary colic.

DIAGNOSIS

No case has yet been accurately diagnosed on clinical evidence; the usual diagnosis is duodenal ulcer or gall-bladder disease. The only method of diagnosis is the gastro-intestinal examination. This examination should determine the size and shape of the diverticulum; the situation; the dimensions of its orifice; the mobility of the diverticulum; the length of time that barium is retained; and the relation of the diverticulum to the point of tenderness on palpation. The characteristic x-ray finding is a localized collection of barium, extraluminal, with a smooth, circumscribed border. Usually one can demonstrate the connection between the diverticulum and the lumen of the bowel, especially when the diverticulum is carefully palpated. Occasionally the diagnosis is based on the retention of barium in the diverticulum after the stomach and duodenum are empty. Twelve of my cases had a six-hour residue in the diverticulum.

DIFFERENTIAL DIAGNOSIS

Any shadow (gall-stones, urinary calculus, calcified mesenteric lymph nodes, etc.), lying in the close vicinity of the duodenum may be mistaken for a diverticulum. However, if a "scout" film of

Fig. 1

Fig. 2

Fig. 1 (Case 1).—Diverticula of the duodenum, associated with a gall-stone in the common duct. Removal of the gall-stone and drainage of the gall-bladder gave complete relief from symptoms. The diverticula were not removed.

Fig. 2 (Case 1).—A roentgenogram made five years later. Both of the diverticula show a distinct increase in size, despite the fact that patient remains free from symptoms.

the abdomen is made prior to the administration of the barium these should easily be ruled out. Barium retained in a haustra of the transverse colon may simulate a diverticulum of the duodenum in appearance. Careful palpation should differentiate between the two.

Pseudodiverticula due to a bulge, proximal or distal to the contraction of a duodenal ulcer, are extremely difficult to differentiate from actual diverticula secondary to ulcer. However, primary diverticula, which occur only in the second, third, and fourth portions of the duodenum, are not likely to be misdiagnosed in this respect. In one of my patients a large diverticulum of the fourth portion of the duodenum was mistaken for a perforated malignant gastric ulcer with an accessory pocket, as it contained a fluid level with a gas bubble at the top.

In another case a diagnosis of traction diverticula was made, but at the autopsy this was found to be the fibrous remnants of a gall-bladder which had perforated into the duodenum. Dilated ampulla of Vater cannot be differentiated from true primary diverticula. The three characteristics of a primary diverticulum are: its mobility on palpation; its lack of pain on palpation; and the tendency for six-hour retention of the barium in the diverticulum.

REPORT OF CASES

Case 1.—Patient, a male, sixty-six years of age, was admitted to the hospital February 2, 1926, complaining of anorexia, jaundice, and weight loss. About three months prior to admission he began having an indefinite epigastric distress not relieved by food or soda, but with temporary relief on catharsis.

Anorexia was pronounced, due partially to the flatulence brought on by eating. During this period he had lost approximately forty pounds in weight. Six weeks before admission he had a rather severe icterus which, however, was considerably improved when he entered the hospital.

Previous illnesses had no apparent bearing on present symptoms. He could never remember having had any gastro-intestinal troubles prior to the onset of present illness.

Roentgenographic Findings. Repeated gall-bladder dye studies failed to show any opaque substance in the gall-bladder although the patient had no diarrhea or vomiting, and the dye substance had been absorbed from the gastro-intestinal tract, none being seen in the scout film of the abdomen. The gastro-intestinal examination showed both the stomach and duodenal cap normal in appearance. In the second portion of the duodenum there was noted a triangular-shaped accessory pocket of barium in approximately the region of the ampulla of Vater. There was a six-hour retention of barium in this pouch.

There was also another pouch on the superior surface of the third portion of the duodenum, the latter having the characteristic appearance of a diverticulum (see Fig. 1). There was a normal motility of the barium except for the barium residue in the diverticulum. The barium enema failed to show any demonstrable lesion. No diverticula were present in the colon.

Operative Findings.—The gall-bladder was tense and distended with bile. No gall-stones were found. The common bile-duct was enormously enlarged and a gall-stone 1.5 by 2 centimeters in diameter was found lying in the lower end near the ampulla of Vater. The gall-stone was removed and a catheter passed into the hepatic duct and sutured. The gall-bladder was opened and drained. Neither of the diverticula was removed.

Following a rather stormy convalescence patient made a complete recovery, and up to the present time has had no recurrence of his symptoms. Despite this a roentgenographic study on December 5, 1931 (five years later), still showed both diverticula present (see Fig. 2). Both of the diverticula were distinctly larger than in 1926. Apparently the diverticula had no relationship to the patient's symptoms despite the gall-stone in a dilated common duct.

* * *

Case 2.—The patient, a female, age seventy-two, entered the hospital December 5, 1929, complaining of weakness, tarry stools, and pain in the left lumbar region. Five weeks before admission to the hospital she had a sudden gastric hemorrhage following which the stools had been constantly dark in color and tarry in appearance. During this time her only complaint was a slight burning pain in the epigastrium, relieved by food and soda. Her appetite was always good and there had been no nausea or vomiting. For ten days prior to her admission to the hospital she was quite weak owing to the constant loss of blood. There was a moderate weight loss.

Past History.—Usual childhood diseases; no serious illness since. For several years she had noticed a slight dyspnea on marked exertion, not enough, however, to prevent her usual daily activities. She did not recall having had any gastro-intestinal disturbance

prior to onset of present symptoms.

Roentgenographic Findings. The preliminary scout film of the abdomen showed a large circular-shaped gas pocket in the epigastrium. After the patient had swallowed the barium this was found to lie medially to the lesser curvature of the stomach (see Fig. 3). The pocket was about three inches in diameter, spherical in shape, and there was a definite fluid level in its lower third. After the barium had been in the stomach for a few minutes it filled the lower third of the pocket. Gas was present in the pocket throughout the entire examination; change in position of the patient failed to change the fluid level. The contour of the stomach was smooth and symmetrical with no demonstrable filling defects, niches, etc., nor was there any demonstrable connection of the stomach to the pocket so far as could be determined. However, on direct anteroposterior palpation there was found a large carcinomatous ulcer on the posterior wall, giving the typical meniscus sign as described by Carman. This finding suggested that the pocket was due to a perforation of the ulcer with the formation of an accessory pocket. Exploratory operation was advised, but refused by the patient, who died February 3, 1930.

Fig. 3 (Case 2).—Diverticulum of the fourth part of the duodenum, associated with a carcinomatous ulcer of the posterior wall of the stomach. The diverticulum had all of the roentgenographic characteristics of an accessory pocket due to perforated ulcer. The fluid level remained unchanged with change in posture of the patient.

Autopsy Report.—The thorax is negative except for a moderate enlargement of the heart. "The stomach contains about 200 cubic centimeters of thick grayish fluid. About 3 centimeters from the pyloric ring on the posterior wall there is a large circular-shaped malignant ulcer 8 centimeters in diameter and three centimeters deep, with indurated edges from 1 to 1½ centimeters thick. The duodenum is dilated and contains a quantity of gray mucus. There is a large diverticulum in the fourth portion of the duodenum measuring about three inches in diameter. The diverticulum is adherent to the undersurface of the malignant ulcer, but there is no direct communication between the stomach and the pouch. The diverticulum communicates with the duodenum through an opening about 2 centimeters in diameter. Its walls are smooth and thin, apparently containing normal mucosa. There are no anomalies seen in the pancreas."

Fig. 4.—Multiple diverticula in the second, third, and fourth portions of the duodenum. The large diverticulum measured 4.5 centimeters in depth and 6 centimeters in diameter. There was a forty-six-day stasis of the barium in this diverticulum. Note the unusually low position of the third and fourth portions of the duodenum. The weight of the diverticulum may partially explain this abnormal position.

Anatomical Diagnosis.—"Carcinoma of stomach, ulcerated; diverticulum of duodenum; generalized arteriosclerosis; obesity; and hypertrophy of the heart."

COMMENT

In this case we find a large diverticulum of the fourth portion of the duodenum, with roentgenographic findings suggestive of an accessory pocket due to perforation. As a possible source of perforation there is a malignant ulcer on the posterior wall of the stomach. It is difficult to see how there could be a fluid level when the opening of the pocket into the duodenum was approximately two centimeters in diameter.

Lund [9] has reported a case of diverticulum of the fourth portion of the duodenum with roentgenographic findings very similar to this case. However, in his case there was no coexisting pathology in the stomach and the diverticulum communicated with the duodenum through a long narrow stem. In his case, too, the diverticulum had caused symptoms suggesting gall-bladder disease, while in my case no symptoms were noted prior to the onset of the cancer.

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DISCUSSION

JOHN D. LAWSON, M. D., Woodland Clinic, Woodland).—Diverticulosis of the gastro-intestinal tract is a subject which has found its way into the literature rather consistently. Previous to the advent of the radiopaque meal, it was by reason of anatomical study, but since 1913 the subject has been primarily of radiologic interest.

Eliminating the colon from consideration, the duodenum is most frequently the site of diverticulosis, referring, of course, to the congenital type of diverticulum. It would appear that the frequency of this lesion is much more common than is generally considered.

The roentgenologist must have in mind the possibility of this lesion in the examination of every patient, and while the second, third, and fourth portions of the duodenum are extremely infrequently involved by any pathologic condition amenable to roentgen-ray diagnosis, yet the observation of these structures must be carefully followed out in order that this type of lesion be not overlooked.

Examination must be made in both the prone and erect positions, and sufficient manipulation and rotation must be done to insure a complete visualization of the entire duodenum. It is frequently stated that diverticuli of the first portion of the duodenum do not occur, but in this I cannot concur, as diverticuli at this site have been noted in several cases which have come under my observation.

I believe the roentgenologist should most certainly stand his ground when a diagnosis of duodenal diverticulosis has been made and the surgeon fails to demonstrate the lesion at operation. There is very little possibility of the trained roentgenologist being in error in this opinion, and the detection and demonstration of a thin-walled sac in the retroperitoneal structures is a matter of considerable skill and good fortune on the part of the surgeon.

❋

MILTON J. GEYMAN, M. D. (1520 Chapala Street, Santa Barbara).—Doctor Davis has given us an excellent discussion of duodenal diverticula and his cases are very interesting. While there is no specific group of symptoms in duodenal diverticulitis, we believe many of them are symptom-producing and that their recognition is important. Our impression with regard to their occurrence is that they are more often multiple than single. We agree that the majority occur on the concave side and are almost always of the pulsion type. Rarely they may be seen projecting upward from the superior aspect of the last portion of the duodenum. We have also seen one case in which a long bottle-shaped diverticulum projected downward from the convex aspect of the duodenal second portion. Such unusual duodenal diverticula are usually of the traction type. Any barium-filled structure projecting from the convexity of the duodenal loop of course requires an exclusion of the possibility of cholecysto-duodenal fistula.

In considering the differential diagnosis of duodenal diverticula Doctor Davis mentioned dilatation of the ampulla of Vater. Berg has published a case in which a roentgen diagnosis of peptic ulcer in the second portion of the duodenum was confirmed at operation. The roentgen appearance of this lesion closely simulated that which obtains with barium deposition in a dilated ampulla of Vater. We have never seen extra-bulbar duodenal ulcer nor noted a report of such a lesion in the American literature. A consideration of peptic ulcer in the differential diagnosis of diverticulum is, therefore, probably of no great importance in this country.

❋

CARL H. PARKER, M. D. (65 North Madison Avenue, Pasadena).—Only two of our cases of diverticula of the duodenum have been operated upon where the diverticula were the point of attack. One case was lost track of immediately after the recovery from the operative procedure and thus is of no importance in drawing deductions.

The second case presented symptoms of discomfort in the upper abdomen, associated with vomiting. The clinical findings were suggestive of gall-bladder disease. The roentgenographic study revealed no evidence of pathology in the gall-bladder or stomach, but did show four diverticula of the duodenum and one of the jejunum. This patient was operated upon by Dr. Leroy Sherry of Pasadena, who succeeded in finding and removing three of the four duodenal diverticula. None of them presented any evidences of inflammation. The patient has been entirely relieved of her symptoms, so that it is reasonable to conclude that the diverticula were responsible for the disturbance. There was no other operative procedure.

❋

DOCTOR DAVIS (Closing).—Since this paper has been in press the author has observed several cases of diverticulosis of the duodenum, one of which is especially worthy of presentation.

This patient, a physician, sixty-seven years of age, was referred for a gastro-intestinal examination on November 3, 1932, complaining of hyperacidity and indefinite epigastric distress. The hyperacidity had persisted for thirty years, so that a clinical diagnosis of duodenal ulcer had been frequently made previous to 1919. His epigastric distress consisted chiefly of moderate food retention in the stomach and a feeling of increased abdominal tension, especially in the epigastrium. In 1927 he had had symptoms suggesting an acute intestinal obstruction which, however, disappeared after taking paregoric. For the past ten years he has found it necessary to reduce the size of his meals, also to eliminate leafy and stringy vegetables. He has frequently induced vomiting to relieve the feeling of increased abdominal tension.

The gastro-intestinal examination revealed the presence of four diverticula in the upper small bowel; three of them were in the duodenum, the fourth was either in the fourth portion of the duodenum or in the first portion of the jejunum (see Fig. 4).

All four of these diverticula were on the *convex* side of the bowel, a location exactly the reverse of cases described in the literature. Certainly they were not in relationship with the head of the pancreas. The diverticulum in the first portion of the duodenum had a twenty-four-hour residue. The most distal diverticulum was 4.5 centimeters in depth and 6 centimeters in width, one of the largest on record. To date (December 19, 1932), there is still a moderate barium residue present in this diverticulum; a forty-six-day stasis. This diverticulum was tender on palpation, but not fixed.

Apparently this case is one in which the diverticulosis is the actual cause of the patient's symptoms.

FRACTURES—THEIR TREATMENT*

THE CLINICAL APPLICATION OF CERTAIN FUNDAMENTAL PRINCIPLES

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DISCUSSION *by Ellis Jones, M.D., Los Angeles; Frederick G. Linde, M. D., San Francisco; Steele F. Stewart, M. D., Los Angeles.*

IN assuming the responsibility of treating a patient who has sustained a fracture of the osseous system, a surgeon accepts a threefold obligation: First, to sustain the life of the patient. Second, to save the injured member. Third, to restore the function of the injured member in the shortest possible time.

THE SERIES HERE DISCUSSED

The accompanying series of five hundred fractures, treated on the surgical service of St. Vincent's Hospital, Los Angeles, demonstrates the advisability of bringing to the patient the method of treatment most suitable for each particular patient.

Femur	49	Scapula	6
Patella	15	Humerus	47
Both bones, leg	17	Both bones, forearm	28
Tibia	30	Radius	25
Fibula	15	Ulna	17
Potts	27	Colles	26
Astralagas	4	Semilunar	3
Os calcis	14	Scaphoid, hand	6
Scaphoid, foot	2	Thumb	13
Great toe	15	Metacarpal	18
Ankle	16	Phalanges, fingers	12
Phalanges, foot	22	Spine	14
Skull	10	Pelvis	18
Clavicle	28		

BOHLER'S RULES

There is no dogmatic method to which we must adhere in the treatment of fractures, but there are certain fundamental laws which must be observed if a surgeon wishes to obtain best results. Bohler [1] says, "In the treatment of every fracture, the following fundamental rules must be adhered to:

"1. The peripheral fragment must always be placed in the direction where the central one points.

"2. Every fracture must be reduced by means of traction and countertraction.

"3. After the reduction the fragments must be kept continuously in the right position until firm union takes place."

The conscientious surgeon may fulfill the first two of these principles when he aligns the fractured bone ends and applies traction and countertraction. But, unfortunately, it may be said that quite frequently surgeons neglect to keep fractured bone ends continuously in the proper position until nature has had sufficient time in which to produce a sustaining callus. Insufficient fixation and unnecessary examination lead to bowing of the callus and pseudarthrosis.

Plaster of Paris.—It is of historic interest that plaster of paris first came into surgical use in the year 1852. This method of fixation had many evident advantages, and was therefore used by surgeons in the treatment of all fractures, and of all pathologic conditions of joints. The casts applied were of enormous size and, because of their extreme weight, forced the patient to remain in bed, thereby obviating exercise. Because of this injudicious use of a good method of fixation, the pendulum swung the other way, and Lucas-Championière brought out his method of early massage and mobilization. In some instances the surgeon neglected to reduce and align the fractured bone ends before attempting massage. This indiscriminate use of meritorious method unfortunately left its train of poor results. What we surgeons of today should follow is not fixed methods of treatment, but fixed and fundamental principles which will give good functional results in the treatment of fractures.

FRACTURES OF THE FEMORAL NECK

One of the most important fractures which occurs in the body is that of the femur, particularly of the neck of the femur. In this series of five hundred fractures there were forty-nine fractures of the femur; and of these, twenty-two were of the femoral neck. This group of twenty-two may be worthy of analysis.

The object of treatment is to obtain an anatomical replacement of the fragments, together with adequate fixation, maintained until healing has been proved or disproved.

The several methods of traction were discarded early in this series, and Whitman's method was used whenever possible. Nitrous oxid-oxygen anesthesia was given except where contraindicated. Here morphin-scopolamin anesthesia was satisfactorily administered. The thigh was abducted just short of complete abduction together with internal rotation, and a plaster of paris spica was applied which included the entire foot of the injured side and ended just above the knee of the sound side. The patient was then placed on a firm bed and kept there for four months. At this time, healing can be clinically ascertained, augmented by the use of the x-ray.

Granting an accurate reduction in intra-articular fractures, it has been demonstrated that the formation of a callus happens when the blood vessels are permitted to grow uninterruptedly from the spongeosa of one fragment to the spongeosa of the other. Any motion in the hip joint ruptures these delicate blood vessels and permits of resorp-

* Read before the General Surgery Section of the California Medical Association at the sixty-first annual session, Pasadena, May 2-5, 1932.

TABLE 1.—*Fractures of the Neck of the Femur*

Age	Number of Patients	Results
	A.—Whitman Method	
30-40	One	One bony union
41-50	One	One bony union
51-60	Five	Three bony unions One fibrous union One nonunion
61-70	Seven	Three bony unions One fibrous union Two nonunions One death
71-80	Two	One nonunion One death
	B.—Extension Method	
71-80	Three	Two nonunions One death
	C.—No Treatment	
71-80	Three	One nonunion Two deaths

tion of the bone ends. This of course defeats our object of treatment and causes failure. Slipping or jarring is not possible in the properly conducted Whitman procedure.

Twenty-two patients with fractures of the neck of the femur were treated in this series. Of these patients five are dead, three expiring in the hospital and two after leaving the hospital. Two patients died of cardiovascular renal disease, and three died of bronchopneumonia.

The age incidence by decades shows one patient between thirty and forty, one between forty-one and fifty, and five between fifty-one and sixty. These patients presented no mortality. There were seven patients between sixty-one and seventy, with one death. The decade between seventy-one and eighty showed eight patients with four deaths.

The Whitman Method.—The Whitman method was used in sixteen patients, with two deaths. By age groups we find one patient between thirty and forty, with bony union; one between forty-one and fifty, with bony union. There were five patients between fifty-one and sixty, and of these, three showed bony union, one showed fibrous union, and one showed no union. Between sixty-one and seventy there were seven patients, with one death. Three showed bony union, one fibrous union, and two terminated in nonunion, with one death. Between seventy-one and eighty, there were two treated patients with one death. The surviving patient presented nonunion.

Extension Method.—Three patients were treated by the extension method, with one death, while two patients showed nonunion.

TABLE 2.—*Mortality Table*

Age	Number of Patients	Results
30-40	One	
41-50	One	No deaths
51-60	Five	
61-70	Seven	One death
71-80	Eight	Four deaths

NO TREATMENT GROUP

Under no treatment we included three patients who were too weak to stand any surgical procedure. Two of these died, with the survivor presenting nonunion.

It is evident that up to the age of seventy years we can expect a minimum number of deaths (7 per cent) and a high percentage of patients who show bony union (57 per cent). If the cases of fibrous union were included, our cases of union would have been (71 per cent). But in the years between seventy and eighty we can expect a high percentage of deaths (50 per cent); and a low percentage (nil) of bony union.

INTERTROCHANTERIC FRACTURES

Of the forty-nine fractures of the femur, we had twenty-seven patients with fracture distal to the femoral neck. Eight of these were of the intertrochanteric variety.

The patients were of an average age of fifty-seven years. There were no deaths, and all obtained bony union with good functional results. If a patient suffering with a fracture of this variety survives the usual constitutional embarrassments, he is almost certain to obtain a good walking leg.

These patients were all treated in a suspended Thomas splint, with adhesive plaster traction together with an average weight-pull of sixteen pounds. One-half of the patients were treated with early mobilization of the knee joint, and the rest were treated with the knee in the extended position. There was a fifteen per cent of loss of flexion of the knee joint in patients treated by either method.

As soon as possible after hospitalization, these patients were given sufficient morphin to control pain and shock. The pull was exerted in the long axis of the leg until shortening had been overcome, and then the entire splint was swung out into the position of wide abduction to prevent coxa vara. The splint was worn for an average of ten weeks, following which time the patient remained in bed for an additional four weeks. Then a walking caliper splint was applied, and the patient was permitted to bear 10 per cent of his weight with crutches. This amount of weight was gradually increased, and the brace was discarded between the seventh and eighth month.

The results obtained were bony union in all patients with an average of 15 per cent of limitation of flexion of the knee joint, and of 12 per cent of limitation of abduction of the hip joint. The nonindustrially injured returned to work in nine months, while the compensation cases returned to work at the end of one year.

FRACTURES OF THE SHAFT OF THE FEMUR

Of this variety there were nineteen fractures. The location of the fracture varied from the upper third of the femur to, and including, its lower articular end. These fractures were treated in eleven instances by adhesive plaster traction together with the Thomas splint, Hodgen's splint,

Braun splint, Buck's extension, plaster of paris and overhead traction in children. In eight instances skeletal traction was used.

Union is seldom firm before twelve weeks have elapsed. At this time the callus is still soft, and weight bearing will cause angulation at the sight of fracture. We, therefore, always advise the use of a walking caliper splint to disperse strain away from the tender callus. The splint is worn for several months.

We were able to obtain osseous union and good walking legs in the nineteen patients who were under our care from the time of their fall. There were two patients who came under our care four months after the accident in whom it was necessary to perform an open reduction.

Skeletal Traction.—In this series of cases conservatism was practiced whenever expedient, but we are of the firm opinion that skeletal traction is the method of choice in fractures of the lower one-fourth of the femur, with marked posterior bowing of the distal fragment. Skeletal traction with the knee partially flexed, will place the distal fragment in line with proximal fragment; it will relieve pressure from the nerves and blood vessels, and it will usually disengage incarcerated muscle tissue. The Mathews piano-wire pin and stirrup is the easiest to apply, and causes the least damage to the tissue.

If the surgeon elects to treat the suprapatellar type of fracture with the knee in the extended position, the distal fragment will be forced further posteriorly; the blood vessels and nerves will be continuously pressed upon, and the incarcerated muscle tissue will be tightly held between the fractured bone ends. Here an open reduction will have to be performed because of pseudarthrosis, or because of a vicious union. Even after the open reduction, the results are not all we would wish them to be because the patient has been given a "clinical test" and the pseudarthrosis may not have been definitely determined for several weeks or months after the accident. At this time adhesions have formed about the knee joint and perhaps also the ankle joint. There may be present bone and muscular atrophy, together with nerve and blood vascular damage. These conditions augur trouble after an open reduction.

FRACTURES OF THE PATELLA

Fractures of the patella, whether due to direct or indirect violence, cause separation of the fragments, the degree of which depends upon the strength of contraction of the extensor muscles of the thigh, together with the amount of laceration of the expansion of the quadriceps aponeurosis.

If the patient is young and one whose work is of a laborious nature, we advise open reduction. On the contrary, in patients past middle life whose work does not entail vigorous activity and in whom the separation is not too great, we offer nonoperative treatment. In patients with appreciable separation of patellar fragments, treated by the nonoperative method, we seldom see a true bony union, but we can always obtain a functioning fibrous union, the strength of which may reach astounding proportions. Eight patients were treated by the open method and seven by the closed method, with good functional results.

FRACTURES OF BOTH BONES OF THE LEG

Wherever possible a plaster of paris cast was used in the treatment of this important fracture, the reason being that it was simpler. If shortening had been overcome at the original reduction, anteroposterior and lateral bowing was easily handled by partially splitting the plaster cast and then wedging the fragments to the proper alignment by inserting pieces of wood which later were fixed in place by a few turns of a plaster bandage. This procedure was possible in twelve of our seventeen patients. In five cases we resorted to the Mathews type of skeletal traction. Bony union and good functional results were obtained in all patients of this series. In one patient who had sustained a compound fracture, it was necessary to disengage incarcerated soft tissues and perform a sliding bone graft, after the Albee technique.

POTT'S FRACTURE

This type of fracture should be treated as early as possible by flexing the leg upon the thigh, followed by moulding the fragments over into extreme adduction with the foot flexed to a right angle. A plaster of paris splint is then applied. After ten days have elapsed, the plaster is removed, gentle massage and active motion is inaugurated and practiced every few days, the splint being worn in the meanwhile. Weight bearing is permitted after the tenth week. Even after an accurate reduction, if the foot is not held in the grossly overcorrected or adduction position we find painful feet and ankles due to a condition of faulty posture and flat-feet. At times it is advisable to wedge and extend the inner side of the heel of the shoe because of symptoms from a weakened longitudinal arch of the foot. By taking these factors into consideration we were able to obtain good functional results in the twenty-seven cases of this series.

FRACTURES INTO THE ANKLE JOINT

Fractures which enter into the ankle joint are always serious and at times leave some degree of permanent disability. We have obtained the best results by immediate reduction under general anesthesia. The leg should be flexed on the thigh and the foot manipulated in an attempt to restore the line of weight bearing, permitting the foot to rest at a right angle with the leg. If the posterior edge of the tibia is fractured, the foot should be dorsiflexed past 90 degrees, then the molded plaster splints are applied. The ankle should be inspected every five days, and after six to eight weeks the splint may be removed and graduated weight bearing permitted from the eighth to sixteenth week.

Fractures which involve the anterior lip of the tibia should be treated with the foot plantar flexed. This should be checked by x-ray examination and, if necessary, skeletal traction through

the os calcis may be used with the foot plantar flexed.

In fractures of both malleoli with gross widening of the ankle joint and with separation of the lower ends of the tibia and fibula, we may obtain partial permanent disability resultant from an unstable support for the leg and a subsequent arthritis. In six fractures of this type we obtained 30 per cent of disability. However, in three subsequent cases this amount of disability was cut down to 12 per cent by using skeletal traction.

FRACTURES OF THE OS CALCIS

This fracture is of serious significance because of its economic nature. Fractures of this type are usually found in vigorous individuals who earn their livelihood by working above the ground.

Fractures of the os calcis may show lateral widening, avulsion of fragments or simple lines without appreciable deformity. Treatment consists of restoring the normal configuration of the bone by the padded hammer, or redresseur, followed by a snugly fitting plaster dressing. Disability remains from six to twelve months, and good functional results were not obtained in over 70 per cent of the fourteen cases in this series.

FRACTURES OF THE HUMERUS

A. Fractures of the Anatomical Neck of the Humerus.—These may be impacted or in grossly bad position. Generally speaking, the impacted fractures should not be disturbed, particularly in the aged. Good functional results can be obtained by the use of a sling to the forearm, accompanied by active motion and massage. If the fractured fragments are in grossly abnormal position, it may be necessary to apply extension in bed for a few weeks followed by the aeroplane type of splint.

B. Fractures of the Surgical Neck and of the Shaft of the Humerus.—In this type of fracture if the bone is impacted, or with little displacement, good results are obtained by conserving the position of the fragments by coaptation splints, together with fixation of the shoulder and elbow, aided by an ordinary sling. If there is overriding and marked displacement of the fractured fragments it becomes necessary to exert continuous traction. A fairly comfortable and extremely efficient method of treating these patients is a suspended Thomas arm splint. By using the suspension feature the patient can sit up or lie down in bed with the splint at all times in the proper position.

In forty-seven fractures of the humerus treated conservatively, we obtained good functional results in all cases. In seven patients with a fracture high up on the shaft which failed to come down by adhesive plaster traction, we inserted a Mathews pin through the condyles, or olecrenon, with 80 per cent of apposition in seventy-two hours.

FRACTURES OF THE SCAPHOID BONE OF THE HAND

These fractures should be treated early with a plaster of paris splint, which runs from the metacarpophalangeal articulation up to the elbow. The wrist is dorsiflexed and the hand placed in ulnar deviation. The splint is worn for six or eight weeks. At this time a woven elastic bandage is worn for two or three weeks longer. By following this procedure we were able to obtain bony union in all six of our cases. In our experience, the surgical removal in whole or in part of the scaphoid bone leaves a certain degree of partial permanent disability.

OTHER FRACTURES

The treatment of fractures of the elbow, forearm, hand, spine, and pelvis has now become standardized; the results are quite similar and will not be discussed at this time.

OPEN OPERATIONS

Brilliant results should follow open reductions for fractured bones, but good results depend upon many factors:

1. The surgeon must be particularly trained, with a highly trained assistant, aided by a competent operating-room personnel.

2. The operation must be definitely indicated.

3. The decision to operate must be made early, and then carried out while using scientific mechanical principles.

4. The fundamental principles of general medicine must be understood by the surgeon in charge.

5. Forethought is necessary. The surgeon is responsible for having at hand adequate retentive apparatus to be used postoperatively.

CAUSES OF POOR RESULTS AFTER OPEN OPERATION

1. An overanxious surgeon who insists upon an exact anatomical replacement of the fractured fragments rather than a satisfactory functional result.

2. The operation is not indicated. By this we mean the surgeon has not equipped himself with a proper knowledge of the principles of traction and countertraction. His knowledge of skeletal traction may be superficial or prejudiced because of a few early unfortunate experiences. A suprapatellar fracture may give a brilliant result if treated by skeletal traction with the knee in the flexed position, and it may yield a miserable termination if treated by open operation if particular care has not been exercised to continuously maintain the corrected position of the lower fragment long after the operation has been completed.

3. The operation is performed too late. The interposition of soft parts should be ascertained within a reasonable length of time. Incarceration or laceration of the musculospiral nerve should be manifest early. So, too, the fact that the anatomical neck of the humerus cannot be replaced in a particular case should be decided before the patient has suffered from nerve and blood vascular damage, peri-articular adhesions and perhaps a secondary anemia from prolonged traction in

bed. An evident pseudarthrosis in the shaft of the femur should not be treated in a plaster of paris spica which immobilizes the lower chest wall, hip, knee and ankle joints for six or eight months before resorting to open operation. The operation may result in perfect bony union, and still the patient may have a residual partial permanent disability because of secondary changes in the hip, knee and ankle joints. All these unfortunate conditions can be avoided by early consultations with highly trained bone and joint surgeons.

4. The surgeon disregards the fundamental principles of general medicine. Abscessed teeth, infected sinuses, bronchiectasis, diabetes, severe nephritis, insanity, alcoholism, pernicious anemia, and advanced tuberculosis all play a rôle in mitigating or preventing good results after open reductions.

5. The surgeon lacks forethought. We have seen surgeons have the position of fractured bone ends lost and grafts fractured by entrusting the handling of an extremity to an uneducated orderly or to a not too interested assistant.

RECAPITULATION

In certain fractures it is absolutely necessary to perform an open operation. The decision to operate should rest upon the shoulders of a surgeon particularly trained in bone and joint surgery, who should be able to weigh the advantages and disadvantages of traction and countertraction, and also of skeletal traction, in the particular case under observation. If experience has shown that these methods of treatment will not give good functional results, open operation may then be performed. But the injudicious subjecting of patients of all ages, states or conditions of health to anesthetics of several kinds and operative procedures of varied lengths will sooner or later cause embarrassment to all concerned. If one visits the noteworthy fracture clinics of our country, one will be struck by the fact that the number of open operations is rapidly diminishing.

It is evident, therefore, that there is no dogmatic procedure to be followed in treating a fracture. Good results depend upon an adequate study of each patient. There is a dire necessity that the surgeon develop a perfected technique in reducing the fractured bone ends and have at hand satisfactory methods of retention either by using plaster of paris or one of the various acceptable splints. He should understand the principles of traction and countertraction and be able to quickly apply them. If the simpler methods of traction have not worked out satisfactorily in a particular case, the surgeon should fearlessly make use of skeletal traction. If it is apparent that these methods of treatment will not prove to be efficacious in a particular case, open operation should be considered and speedily performed.

2007 Wilshire Boulevard.

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DISCUSSION

ELLIS JONES, M. D. (201 Medical Office Building, Sixth Street at Lucas, Los Angeles).—We are grateful to Doctor Breslin for this survey of the general treatment of fractures in a large metropolitan hospital. His wide experience cannot fail to command our respect and stimulate our interest.

I am particularly interested in the presentation of end-results of treatment of fractures of the femoral neck. Traction methods are obsolete. Royal Whitman's method of reduction of fresh fractures of the femoral neck by abduction in internal rotation has stood the test of time and experience, and justifies our acceptance of this method as good treatment, especially in patients in early or middle life.

We have been led to believe, however, that an anteroposterior x-ray of a reduced fracture gives us an adequate interpretation of the reduction. This is not true. An anteroposterior view will not reveal a lateral angulation of the neck or demonstrate our failure to secure accurate apposition. A lateral view, made according to Clayton Johnson's technique, should be made routine in the roentgenologic study of all fractures of the femoral neck.

However, even the most accurate reduction of femoral neck fractures does not at all insure union. We believe that failure of union is largely due to the small size of the femoral neck, its minimal blood supply, interposition of the torn capsule in comminuted fractures, and the difficulty of maintaining accurate contact in oblique fractures of the neck.

In patients in middle and later life the occurrence of nonunion is variously reported in from 30 to 70 per cent of all patients treated by the conservative method. It is for this reason that in selected cases I have explored fractures of the femoral neck in such patients and have endeavored to obtain a clearer conception of the mechanical factors involved in a particular fracture. At operation an accurate reduction is obtained under the eye, and internal fixation is maintained by a trochanteric bone transplant bridging the neck and reinforced by adequate plaster fixation. Bridging of the fracture line with an autogenous bone graft provides firm internal fixation, and we believe with Albee that the bone graft furnishes "an osteogenetic callus-forming influence, serving as a vascular conducting scaffold, conducting blood from the vascularized trochanteric region to the anemic capital fragment." Murray states that the bone graft acts as an actual calcium source for the healing granulation tissue.

I believe that operative treatment has a distinct place in the treatment of fractures of the neck of the femur, and that there remains a relatively large group of patients in whom operation offers the only reasonable opportunity to obtain a good functional end-result. So long as surgeons are content to treat all fractures of the femoral neck by the Whitman method, regarding the choice of this method as final, there can be little hope of raising the percentage of successful end-results.

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FREDERICK G. LINDE, M. D. (1020 Fitzhugh Building, 384 Post Street, San Francisco).—Doctor Breslin's paper should show how the treatment of fractures is carried out in a well organized and up-to-date fracture service. The résumé signifies a careful endeavor to arrive at early function by the inclusion of such practical methods, more recently introduced, as well as the older types of treatment which have had favor in the past. His results compare most favorably with those of other services of similar character and size.

It is particularly gratifying to note the emphasis placed by Doctor Breslin on conservatism. Open reduction in all cases cannot now be accepted as the usual method of procedure. Major operative hazards are no longer necessary in most cases, since we have such effective means of accomplishing the desired results without them. The proper and comprehensive use of skeletal traction has minimized the necessity

for major surgery in most instances, and is a procedure which should be thoroughly understood by any surgeon who is called upon to treat fractures. Doctor Breslin does not hesitate to advise open reduction when indicated, but the indications should definitely be those which have signified the failure of conservative measures. The percentage will be extremely low.

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STEELE F. STEWART, M. D. (3780 Wilshire Boulevard, Los Angeles).—Doctor Breslin has furnished us with an excellent reason for the satisfactory treatment of fractures.

We are pleased to note his commendation of the Mathews piano-wire form of skeletal traction which, so far as we know, is the most satisfactory method of applying skeletal traction, being much less damaging to apply than either the Steinman pin or the ice-tong type of traction; because of its small size, it can be easily applied to very much smaller points. We feel that traction is most desirable in practically all types of fractures, making use of the natural splinting action of the attached periosteum and surrounding muscles. The Mathews system has a further advantage of being applicable to parts where there has been considerable damage to the soft tissues.

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DOCTOR BRESLIN (Closing).—I wish to thank Doctors Jones, Linde, and Stewart for their discussions. It is true that an anteroposterior view of the hip will not reveal a lateral angulation of the neck of the femur, or show the cause of our failure to secure an accurate apposition of the fractured fragments. Doctor Davis, the roentgenologist for St. Vincent's Hospital, has adopted the Johnson technique as a routine measure in the roentgenologic study of all fractures of the femoral neck. What we have attempted to do in the treatment of all fractures is to obtain good functional results with a minimum of risk, particularly as to life. We have therefore made a serious effort to keep our open reductions at the lowest possible level.

THE LIVER IN CHRONIC HUMAN AMEBIASIS—ITS RELATIVE SIZE

By LUTHER MUSSON BOYERS, M. D.
Berkeley

DISCUSSION *by Alfred C. Reed, M. D., San Francisco; John V. Barrow, M. D., Los Angeles; Rawson J. Pickard, M. D., San Diego.*

IN 1925 the presence of both motile and encysted forms of *Entameba histolytica* in the duodenal area was reported.[1] This finding again emphasized the importance in chronic amebiasis not only of the duodenal area, but of the whole liver area as well, and raised the question whether liver size might or might not have relative importance in helping to delineate the symptoms and signs of chronic human amebiasis as seen in California. To this end we began to record liver measurements. The data have been accumulating for the past eight years and are now for the first time assembled and digested by graph.

METHOD OF MENSURATION

In choosing the method of mensuration the author's effort was to secure one as simple and direct as possible, using percussion and palpation in the right midclavicular line.

Actually in our own work the sequence of events leading to this type of mensuration was: first, apparent increase in positive findings of *Entameba histolytica* in the feces when bile or bile salts had been administered by mouth previous to examination of fecal smears; second, demonstration of both motile and encysted *Entameba histolytica* in the duodenal area in material obtained by duodenal tube; third, failure of a highly competent roentgenologist to recognize the great increase in size of the right lobe of the liver caused by amebiasis accompanied by liver abscess.

Fig. 1.—Illustrates the occasional impossibility of ascertaining the size of the liver by roentgenogram. The individual of whom this roentgenogram was made had a liver containing a large abscess in the right lobe, this lobe extending well below the level of the umbilicus. The liver was described by the roentgenologist as "normal in size."

An illustration of the inadequacy of roentgen-ray examination as a means of determining liver size is found in the accompanying reproduction of a roentgen-ray film made in 1925. As is evidenced by the notations in script on the film, the examiner found considerable difficulty in orienting himself as to right and left. The pertinent part of the conclusion by this examiner was that "the liver shadow is not large." Yet at the time that roentgenogram was made the liver was a large mass, firm in consistency, painful on pressure, containing in the right lobe a large abscess fully 15 centimeters in diameter. The lower edge of the right lobe extended to a level at least two fingerbreadths below that of the umbilicus, and was easily palpable. The roentgenologist's difficulty suggests that since roentgen-ray examination can only lead to a record of physical density, the values obtained by it will always be limited by discernible contrast. In the event of lack of contrast there can be no mensuration.

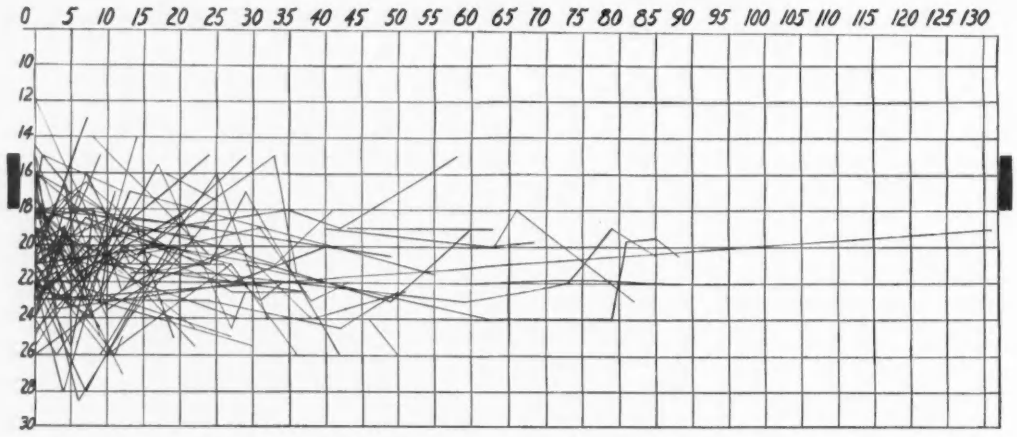

Chart 1.—(With abscissas reading 0-30) is as follows: Ordinates, time in months. Abscissas: Measurement in centimeters of the diameter of the right lobe of the liver in the midclavicular line (by percussion and palpation).

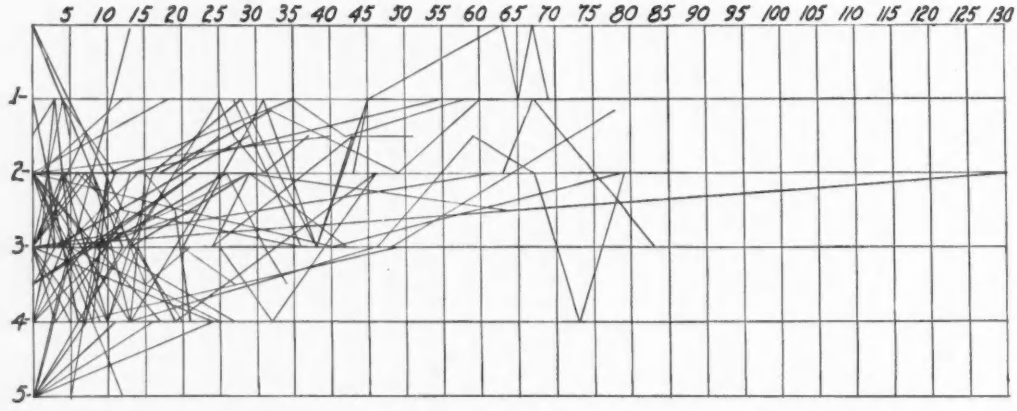

Chart 2.—(With abscissas 0-5) is as follows: Ordinates: Time in months. Abscissas: Measurement in finger-breadths of the right lobe of the liver downward from the costal margin in the midclavicular line (determined by percussion and palpation).

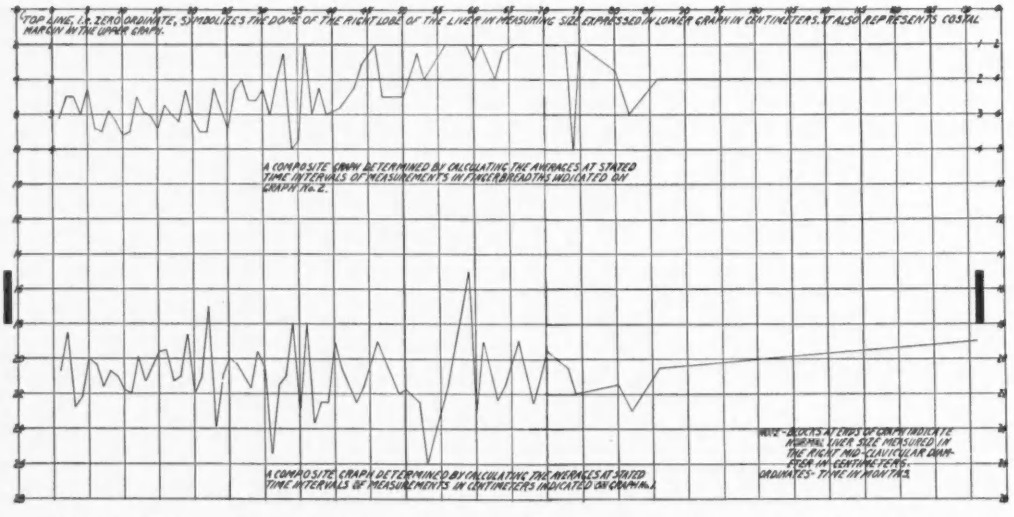

Chart 3.—Upper graph: A composite graph determined by calculating the averages at stated time intervals of measurements in finger breadths indicated on Graph No. 2. Lower graph: A composite graph determined by calculating the averages at stated time intervals of measurements in centimeters indicated on Graph No. 1.

The literature pertaining to measurement of the liver includes descriptions of fairly numerous "anatomical" measurements in the nonliving, roentgen methods including both screen and film in the living, and dye methods plus roentgen ray in the living.[2]

MEASUREMENT STANDARD ADOPTED

Because of the wide range in anatomical size of the liver in the human being, and out of experience, we selected in the present study the "normal" adult anatomical diameter of the right lobe of the liver in the right midclavicular line as ranging between 14.5 centimeters and 18 centimeters. This range is indicated on graphs, numbers 1 and 3, by the blocks on the right and left margins. It is believed that these graphs may serve to show at a glance the predominance of enlarged livers in cases of chronic human amebiasis and may suggest also a slight drift toward the "normal" limit under prolonged care. It would seem to be apparent that the problem of liver involvement in these cases is a continuous one.

MATERIAL FOR THE GRAPHS

The figures from which the lines on the graphs are derived represent actual data from our records. They represent a selection of eighty-four out of one group of six hundred seventy-four cases of amebiasis where the physique and temperament of the patient permitted relatively prolonged control, the average duration being two years and three months.

The total number of males in this study is thirty-nine (constituting 46.42 per cent of the patients. The total number of females is forty-five (53.57 per cent of the patients).

Seventy-seven of the eighty-four cases are represented on the fingerbreadth graph. There are two hundred fifty-one measurements in fingerbreadths, *i. e.*, two hundred fifty-one points on the fingerbreadth chart.

Seventy-nine cases are represented on the centimeter chart. There are two hundred sixty-nine measurements recorded on this chart.

The shortest period of time represented—that is, the shortest period of time elapsed between the first and final measurement—is two months. The longest period is one hundred thirty-one months. The average length of time for the eighty-four patients is 27.62 months, or two years and approximately three months.

TENTATIVE POSITIVE CONCLUSIONS

The tentative positive conclusions may be:

1. In chronic human amebiasis there is in this series an increase of activity in the liver area as measured grossly by liver size.

2. The feature of this activity is variability, the size of the liver changing during disease and treatment in a manner not uniform. The lack of uniformity reflects our ignorance of all the factors involved and their relationship. As an example, we have not correlated liver size and a very common arterial hypotension.

3. The graphs would seem to suggest a long-term drift toward smaller liver size under the influence of treatment.

4. The need for more accurate methods of delineating liver size than short-range roentgen-ray palpation and percussion is obvious.

Bank of America Building.

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(*a*) Pfahler, G. E.: The Measurement of the Liver by Means of Roentgen Rays, Based on a Study of Five Hundred and Two Subjects, Am. J. Roentgenol., Vol. 16, No. 6, p. 558.

(*b*) Stewart, William H., Einhorn, Max, and Illick, Earl.: Hepatography and Lienography Following the Injection of Thorium Dioxid Sol (Thorotrast), Am. J. Roentgenol., Vol. 27, No. 1, p. 53 (Jan.), 1932.

(*c*) Tripoli, Carlo, Haam, Emmerich, and Lehman, E. B.: Roentgenographic Visualization of the Liver and Spleen in the Human—A Preliminary Report, Am. J. Roentgenol., Vol. 27, No. 2, p. 265 (Feb.), 1932.

(*d*) Bassler, Anthony: Diseases of the Intestines, Including the Liver, Gall-Bladder, Pancreas, and Lower Alimentary Tract. F. A. Davis, Philadelphia, 1928, p. 18: "The transverse diameter of the liver may be given at from 22 to 24 centimeters (8½ to 9½ inches); the greatest vertical dimension or depth is *about 16 centimeters* (6¼ inches); the anteroposterior diameter, 12 to 18.5 centimeters (4¾ to 7¼ inches)."

(*e*) Stengel, Alfred, and Kern, R. A.: Diseases of the Liver and Gall-Bladder, Nelson's Loose-Leaf Living Medicine. Thomas Nelson & Sons, New York. Vol. 5, Chap. 25, p. 472 (Nov.), 1928: "According to Bamberger, the absolute vertical dullness in the axillary line is 12 centimeters in the adult male and 10.5 centimeters in the female; in the mammillary line the dullness is 11 centimeters in the male, and 9 centimeters in the female; in the parasternal line, 10 centimeters and 8 centimeters."

(*f*) Williams, J. F.: A Textbook of Anatomy and Physiology. W. B. Saunders, Philadelphia, 1924, p. 403: "The liver measures 15 to 17 centimeters (6 to 7 inches) from front to back and about 10 centimeters (4 inches) from above downward in the thickest part."

(*g*) Morris, Henry, and McMurrich, J. P.: Morris's Human Anatomy: A Complete and Systematic Treatise by English and American Authors. P. Blakiston's Son & Co., Philadelphia, 1907, p. 1117, on *The Liver:* "It measures from right to left, 17 to 25 centimeters; from before backward, 7.5 to 15 centimeters; and 15 to 17 centimeters from above downward in the thickest part of the right lobe."

(*h*) Cunningham, D. J.: Textbook of Anatomy, William Wood & Co., New York, 1902, p. 1060, on *Weight and Size of the Liver:* "The average size of the liver may be briefly expressed as follows: It measures in the transverse direction about 7 inches (17.5 centimeters); in the vertical, 6 to 7 inches (15 to 17.5 centimeters); and in the anteroposterior, on the right side where greatest, about 6 inches (15 centimeters).

DISCUSSION

Alfred C. Reed, M. D. (350 Post Street, San Francisco).—It has been known for years that the liver was easily infected in amebiasis and it has been suggested that every case of amebiasis included more or less transfer of amebas to the liver, accompanied by a greater or lesser degree of hepatitis. The importance of liver invasion is difficult to assess but of immediate consequence in therapy. Three points are involved: (1) It is desirable to forestall the development of hepatitis into hepatic abscess. (2) It is desirable to improve impaired liver function for the sake of the general health and resistance of the patient. (3) It is undesirable to use arsenicals, for instance, in treat-

ment if liver function is much impaired. It follows logically, then, that the functional and infective status of the liver, with reference to amebas, ought to be established in every case of amebiasis. The immediate practical question is how best to establish this hepatic status.

The author, in the paper under discussion, suggests external direct mensuration as a practical method. He, himself, notes the major objections to the method, chiefly in the great variation in normal size. It is my opinion that mensuration is of use, but is secondary in practical clinical value to functional tests; and that x-ray examination offers more accurate data as to size than does external mensuration. The data and conclusions in the paper are valuable and interesting, but must be considered in the light of the whole problem. It may well be that experimental methods will be necessary to reach a final working rule.

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John V. Barrow, M. D. (1930 Wilshire Boulevard, Los Angeles).—This paper is timely because of the increasing interest in amebiasis. Several investigators report a moderately high percentage of infestation among the general public. In my own practice the infestation occurs more frequently because of reference and gastro-intestinal work.

The actual measurement of the liver by roentgen ray is very difficult. However, clinically the liver is often increased in size. I am sure this increase is not always due to either large or multiple abscesses. An influence on the liver not accounted for by abscess is that of amebic toxins. Whether the increased icterus index in these cases is a measure of the disturbed liver function has not yet been proved. The inability of the liver to get rid of the surplus bile pigment in the blood can rationally be considered disturbed liver function. In considering the toxicity of amebiasis we may well consider a phase of enlargement as in other chronic toxemias with the subsequent shrinkage, as is the terminal process in severe liver poisoning. The function most disturbed is probably the proteopexic retardation. Upon the gluco-protein combination depends the detoxication of such substances as the body of the ameba may well contain. The toxic protein radical may be taken care of wherever tissue goes into solution for body use. Wherever this physiologic process fails antigens become a burden to normal physiology. Allergic phenomena present themselves in these protozoan cases, as attested by the frequency of arthritis, neuritis, iritis, and disturbance in the blood tissues. Under the influence of treatment the liver becomes clinically better, as shown in Doctor Boyers' third conclusion.

The points made by the author are very helpful, clinically, to all physicians and surgeons. The admitted truth of his contentions must be left for the pathologist to confirm at autopsy. Where proper treatment is instigated in reasonable time the post-mortem findings become fewer and fewer.

❋

Rawson J. Pickard, M. D. (520 E Street, San Diego). The ameba of the chronic amebiasis seen in the temperate zone has been distinguished by Brumpt from the ameba of dysentery on the basis of its "nonpathogenicity." This point is in error. Boyers, Reed, Craig, Barrow, Ravaut, and others have proved that there is a definite symptom complex in infections with this ameba, although it rarely gives rise to dysentery or liver abscess. I submitted the argument that this very difference in disease produced was a support for Brumpt's separation of "E. dispar" as a distinct amebic race (1927).

Taken as a whole the symptoms of chronic amebiasis, although largely subjective, are specific and diagnostic. The author, in this paper, gives us a measurable objective proof of the disturbing effect of this infection on the digestive organs. Judging from the curves in Chart 3, at the fifteen or twenty-month period, a period that includes the majority of the observations, there is little change in the size of the liver during treatment, but these same patients who keep returning for observation are notoriously those who improve under treatment but who continually relapse.

At a time when there is overexploitation of laboratory procedures, and especially of the roentgen ray, Doctor Boyers' sane and common-sense emphasis of careful physical examinations is of a practical value, as great as is the fact that in this series of patients with enlarged livers he has furnished an impressive objective proof of the damage caused by chronic amebic infection.

❋

Doctor Boyers (Closing).—I wish to thank Doctors Reed, Barrow, and Pickard for their discussions. In reply to a personal letter from one of them, I am adding the following information:

From records of 850 cases of chronic human amebiasis, liver measurement (as described above) has been made once, or more than once, in 450 of these cases. Discussion and graphs representing measurement in fingerbreadths and centimeters in 84 cases constitute the text of our original article. Reference to the records of the remaining 366 cases reveals that in these cases 458 measurements in centimeters of the diameter of the right lobe of the liver, and 512 measurements in fingerbreadths of the projection of the right lobe below the costal margin have been made.

The following tables show the frequency of the various measurements and the percentage of those within normal limits and of those larger than normal:

Measurement of the Right Lobe of the Liver in the Right Midclavicular Line, Expressed in Centimeters

	No. of Measurements	Per Cent
14.5 cms. and less than 14.5 cms.	29	6.33
15 cms. and 15.5 cms.	22	4.80
16 cms. and 16.5 cms.	27	5.90
17 cms. and 17.5 cms.	42	9.17
18 cms. and 18.5 cms.	46	10.04
19 cms. and 19.5 cms.	51	11.14
20 cms. and 20.5 cms.	66	14.41
21 cms. and 21.5 cms.	55	12.01
22 cms. and 22.5 cms.	52	11.35
23 cms. and 23.5 cms.	30	6.55
24 cms. and 24.5 cms.	19	4.15
25 cms. to 27.5 cms.	19	4.15
Total measurements in centimeters	458	100.00

Measurement of the Lower Edge of the Right Lobe of the Liver in the Midclavicular Line, Expressed in Fingerbreadths

	No. of Measurements	Per Cent
At the costal margin or barely palpable	60	11.72
1 fingerbreadth or 1.5 fingerbreadths below the costal margin	100	19.53
2 and 2.5 fingerbreadths below	115	22.46
3 and 3.5 fingerbreadths below	172	33.59
4 and 4.5 fingerbreadths below	54	10.55
5 and 6 fingerbreadths below	11	2.15
Total measurements in fingerbreadths	512	100.00

The cases in this study include both sexes, and both children and adults.

The number of cases given is exclusive, with very few exceptions, of those seen in the University of California Infirmary in the years 1919, 1920, 1921, 1922, and half of 1923. It is also exclusive, with a few exceptions, of patients with amebic infection seen in two years' service in the Alameda County Hospital at Fairmont. It is also exclusive of all cases, with one or two exceptions, seen in the Caribbean countries, and is exclusive of those seen in Liverpool and London. It does *not* include clinical and therapeutic positives.

Acknowledgment in these studies is due C. A. Kofoid, Ph. D., Sc. D., and Olive Swezy, Ph. D., of the University of California.

VACCINATION FOR SMALLPOX—THE THREE-POINT CHISEL METHOD*

By GEORGE M. STEVENS, M. D.
Los Angeles

DISCUSSION *by J. C. Geiger, M. D., San Francisco; John J. Sippy, M. D., Stockton; Alex M. Lesem, M. D., San Diego.*

IN August, 1911, Dr. John Force began vaccinating the entering students of the University of California at Berkeley with a dental scaling chisel held perpendicularly to the skin, denuding the epiderm by rotation of the chisel. In this manner three circles of epidermis, two millimeters in diameter, were removed, glycerinized vaccine was then applied to the three denuded surfaces and rubbed gently in. The resultant vesicles were remarkably uniform.

In a series of 111 "takes," measured on the seventh day after the vaccination, the mean diameter was 7.6 millimeters, and the standard deviation was 0.7 millimeters, whereas in a series of 133 vaccinated by the multiple pressure method, the mean vesicle measured 9.3 millimeters, with a standard deviation of 1.4 millimeters. The scars resulting from the chisel method were uniformly circular and approximated 10 millimeters in diameter.

Doctor Force demonstrated this vaccination method to Dr. Frank Kelly and to Dr. A. F. Gillihan, and they used it in their work with the State Board of Health. Dr. Gavin Telfer of the State Board of Health also became familiar with the procedure and recommended it to Dr. William Jeter of our vaccination room as a great improvement over our single-puncture method, then in use.

Doctor Jeter started to use this triple method in the year 1924 and soon became very enthusiastic as to its advantages, claiming that the reactions obtained were far less severe and that the average length of time for healing was cut in two; for on an average only three weeks for healing was required where formerly, by the one-puncture method, the average had been six weeks.

He also found that he could discard his stick of lunar caustic, as by the new method no proud flesh or slough formed after the reaction.

When he told me about the results, I did not believe such an improvement in method could be possible, so I spent a month in the vaccination room to observe, finally becoming convinced of the great advantages of the three-point chisel method.

TECHNIQUE

Vaccination is to be looked upon as a surgical procedure and carried out with all the precautions necessary for the prevention of septic infections. Especially must the physician carefully consider the cleanliness of his person, his hands, the instruments, and the place of operation. Aseptic surgical technique in all that the words imply must be the rule.

* From the Division of Epidemiology of the Los Angeles City Health Department.

THE SET-UP

Rotary chisel (2½ millimeters, Cutter Laboratory, Berkeley).
Sealed capillary vaccine tubes just out of the refrigerator.
Rubber bulbs for same.
Sterile gauze squares for dressings.
Absorbent cotton.
Acetone for washing arms.
Burning alcohol.
Alcohol lamp.
Zinc oxid rubber tape.
Scissors.
Sterile gown.

The blade of the rotary chisel (2½ millimeters) is dipped in 98 per cent alcohol and immediately flamed in flame of alcohol lamp before use on each different person. It may be laid over flat tape spool to cool, blade extended over the edge. The insertion of the deltoid muscle a little to the outer side of the upper arm is selected for the first puncture. The skin is made tense by grasping the inner side of the arm with the left hand, and just enough pressure and twisting (rotary) motion of the chisel is exerted to remove the epiderm. It is important that the abrasion be not too deep, and skidding of the chisel should be avoided. The drawing of blood is also to be avoided, as it may float away the lymph and prevent absorption. Deep scarification is more likely to be followed by an excessive inflammatory reaction.[1]

It is not desirable to abrade deeper than is necessary to see the little reddish points which represents the loops of the capillary blood vessels.[1] The other two denudations are made in the same manner and with the same care above the insertion of the deltoid.

Denudations should never be less than one inch (2½ to 3 centimeters) apart and preferably an inch and a half apart (3½ to 4 centimeters).

The ends of the sealed capillary glass tubes are then broken off (aseptically) and by pressure on the bulb the vaccine is deposited in equal amounts on the three denuded surfaces. With the cooled flat side of the chisel held horizontally, the virus is rubbed gently and carefully into the denuded surfaces. It is our custom to immediately cover the lesions with a loosely fitting square pad of several layers of sterile gauze; a couple of quarter-inch zinc oxid adhesive tapes are applied loosely, but the ends of these should never come together around the underside of the arm. Celluloid shields or other types of dressings are never used. All peripheral pressure or suction is to be avoided.

The chisel with a 2½ millimeter edge is a little safer to use than the one with a 2 millimeter edge. There is a great difference in different persons as to thickness of epiderm, so sharpness of chisel, the amount of pressure, length of rotation, are factors for personal judgment of the physician.

Care must be taken that the chisel blade is not overheated when the vaccine is rubbed in, as

otherwise the vaccine will be killed and will not take. On this account some prefer to use a sterile toothpick, or use two blades and alternate their use.

"Some writers have advocated vaccination by hypodermic or, rather, intradermal puncture. The alleged advantage that little or no scar results is, in reality, a disadvantage, for the presence of the scar and its character constitute, as a rule, visible evidence of the amount of protection against smallpox." [1]

"It is chiefly on account of the great diagnostic value of the vesicle and scar that subcutaneous methods of vaccination are not to be commended." [2]

Again, to quote Osler: "The best indices of the efficacy of vaccination are the course of the vesicle, the general symptoms, and the scar. Ultimately we may learn more exact guides to the immunizing power of vaccine, but at present we can only say that if the vesicle and scar are characteristic, there is more or less immunity."

"Small insertions are insisted upon because the diameter of the lesion (and the depth of the take [4]) is dependent upon the area of the insertion, and the rapidity of the healing is dependent upon the size (and depth [4]) of the lesion." [3]

POINTS IN FAVOR OF THE THREE-POINT CHISEL DENUDATIONS (TRIANGLE FORM)

1. Chances of a take are increased threefold: of great advantage in health department work, both in contacts where every minute counts in getting protection, and also in those instances where it is almost impossible to get people to return in case of failure of take.

2. Local reactions are less severe, as the load is distributed to three areas instead of one.

3. Rotundity of vesicle and of scar tissue are insured; the vesicle, not breaking so easily, does not stick to a gauze dressing so readily.

4. The pitted scar area left conforms to the recommendations of the Local Government Board of England.[2]

5. Reactions of immunity are just as easily read.

6. If the three insertions all take, the surface area of the takes and the depth takes are each only one-third as great as a one-point insertion.

7. No sloughing, no caustic.

8. The danger of secondary infection greatly reduced.

9. Scabs come off on an average in three weeks instead of six weeks.

10. Dressings and after-care are reduced one-half.

11. A reduction of at least two-thirds in the number of cases where axillary lymph glands become involved. A glance at your "Gray's Anatomy," to the picture showing the distribution of the lymphatics of the arm and axillary region, will show you why the load is split up and not all put on one lymph drain.

12. Particularly adapted to health department work on account of its simplicity, rapidity of operation, ease of aseptic surgical technique; assured protection against smallpox; and beautiful scars (not unsightly) characteristically pitted enough to be read for at least a period of seven years after the take.

REVACCINATION

Revaccination of those who have an old pitted scar should be done every seven years. Fifty per cent or more of these will show an immunity reaction. It is not as essential to use the three-point method, as takes practically never react as strongly in those who have had a former take. A good plan, however, is to use the triangle method as usual, using two points of denudation for control observations and one denudation for the insertion of the vaccine. In this way very accurate data can be obtained on immunity.

AFTER-CARE

Vaccination must be treated as a surgical condition from start to finish, and only when the reaction and its effects are entirely over and the skin returns to normal should care be relaxed. Secondary infection under proper technique and after-care is very rare. When it does occur, it is treated symptomatically, as surgical procedure demands.

All primary vaccinations in persons who have not recently contacted smallpox should be observed at the end of ten and fifteen days.

Revaccinations should be observed in two and four days in order to detect a possible reaction of immunity. The vaccination should be considered successful as soon as this reaction of immunity appears and begins to subside.

If no reaction of immunity appears, and if later on no vesicle appears, the vaccine has lost its potency and is at fault.

CARE OF VACCINE

Smallpox vaccine cannot be kept too cold and it must be a constant cold. It deteriorates in the ordinary icebox, and should preferably be kept in the ice-making compartment of the refrigerating machine. If a mechanical refrigeration is not available, and it has to be kept in an ordinary icebox, keep it on the ice in a metal or glass container, and not merely on a shelf. For use in the field, pack in ice, or in vacuum bottles containing shaved ice.[3]

Vaccine must be kept cold from time of manufacture until used. Never expose to body warmth or to sunlight. Even sunlight hitting the arm while vaccinating may kill its potency.

A test for full potency is that vaccine should give 50 per cent of vaccinoid reactions in the group of persons vaccinated successfully more than ten years previously.[3]

COMMENT

"The three-insertion triangle" method of vaccination has been in constant and very nearly exclusive use in the Los Angeles City Health Department since 1924. We estimate that 75,000 vaccinations have thus been performed with far less effort, work, and worry, with a halving of

after-care and dressings, at considerably less expense than from other methods by a technique that seems in every way to fill the requirements of Public Health work. The only objection set forth by the uninitiated seeking vaccination has been the fear of producing large unsightly scars. The uniformly rotund, slightly pitted scars obtained in almost every instance has now gone far to quiet such fears.

116 Temple Street.

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2. Dock, George: Osler's Modern Medicine, 1907 edition.

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4. Observation by G. M. S.

DISCUSSION

J. C. Geiger, M. D. (Director of Public Health, San Francisco).—There is little to be added to Doctor Stevens' presentation of the procedures and advantages of the three-point chisel method of vaccination against smallpox, as developed by Doctor Force of the University of California and practiced rather extensively at the present time. The method is excellent, and has definite advantages over certain other methods, as Doctor Stevens has pointed out.

Another method which might very well be mentioned is that popularly known as the multiple point pressure method, as recommended by the United States Public Health Service. The results of this method, in which there are made, in a small area (of 5 to 7 millimeters in diameter), with a tangentially held sterile needle, a number of punctate abrasions in the upper layers of the epidermis, are likewise highly satisfactory. Indeed, many of the advantages of one method may be credited also to the other.

However, my only purpose in mentioning this other method, and the only comment I have to make on Doctor Stevens' paper, lies in the emphasis that should be made on progressive methods. Vaccination against smallpox has been known and practiced for many years. It is true that we see the large deeply pitted scar less frequently now than we did formerly, but there still occur instances in which this simple procedure, which should cause but a minimum amount of inconvenience and heal without complication, progresses to secondarily infected ulceration, lymphangitis, etc. If the method of vaccination were intelligently carried out in all instances, as it should be, in keeping with the viewpoint that the procedure is really surgical, even with a minimum of follow-up, these complications can be avoided. Doctor Stevens' paper definitely states that the Los Angeles Department of Public Health has accomplished this goal during the period of time that the three-point chisel method has been used.

Progress includes improvement in procedures and methods. We must take cognizance of these, even in those long-established and too frequently taken-for-granted activities in public health, as well as medical and surgical practice.

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John J. Sippy, M. D. (District Health Officer, Stockton).—I commend Doctor Stevens for his description of a procedure which, while perhaps not so apt to engage attention as a rare surgical operation, is of more practical value to the everyday practitioner, and which if followed will induce more persons to accept the benefits of preventive medicine.

In our work in San Joaquin County, we have used the chisel method exclusively. One of the greatest deterrents to universal acceptance of vaccination is dread of unsightly scars. For this reason we use only one scarification instead of three, except in case of smallpox contacts in whom, because of insufficient time for revaccination, we wish to insure a "take." Our experience with both mild and virulent smallpox indicates that immunity conferred by the one-point inoculation is as efficacious as the three-point method.

In girls the site selected for vaccination is the supraspinous scapular area, so that the resultant scar may be hidden under the shoulder straps of dresses. Rarely, with the chisel method, is the scar at all objectionable. Unfortunately, I know of no way to predict the occurrence of keloids, and we have had a few to result. In young children of both sexes, who may scratch the vesicle and thus produce multiple vaccinia, the shoulder site has an advantage of inaccessibility. It is freer from muscle play and clothing friction and, despite possibility of rupturing the vesicle while asleep, this occurs infrequently. We refuse to do leg vaccinations, and I should be interested to hear Doctor Stevens' comment on this latter procedure.

We use bulk vaccine, applied with sterile toothpicks. Careful technique prevents contamination, and we believe our percentage of "takes," which in ordinary routine reaches 98 to 99 per cent, is higher than with the capillary tubes of glycerinated virus.

By way of after-care, we apply no dressings. In a number of instances where patients applied adhesive tape, the irritation and thinning of epidermis produced by the tape has led to widened vesicles or multiple takes and objectionable length of time in healing. Patients with rough or soiled clothing are advised to pin a few layers of clean gauze to the clothing so as to protect the vesicle.

In a series of 38,000 vaccinations we have had no infection, cellulitis, or lymphangitis attributable to this lack of dressing, and it seems to shorten the time of healing. If unusual itching or edema occurs, we advise alcohol to bathe the area around the vesicle or the application of a thin layer of gauze in which an opening is made for the vesicle, and kept moist with alcohol.

Patients are advised to be revaccinated every five years. In no case where this advice is followed have we secured a vesicle, but only an immune reaction. Revaccinations of service men almost all result in immune reactions or rarely in a vaccinoid papule, but not a true vesicle. This would indicate that immunity obtained from a successful vaccination in the vast majority of persons lasts for many more years than five or seven. In fact, although I advise revaccination, I never worry about the occurrence of smallpox in a contact of mild or alastrim type of the disease if he has been successfully vaccinated within his lifetime.

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Alex M. Lesem, M. D. (739 Fourth Avenue, San Diego).—During the year 1924 there occurred in the city of San Diego 426 cases of smallpox. Since 1924 more than 50,000 persons in San Diego County have been vaccinated by the Health Department against smallpox. The technique used in the work is essentially the same as that outlined by Doctor Stevens, with some slight changes which were deemed advisable in order to speed up the work, since large groups of children were being vaccinated in the schools.

The three-point method was used by this department for three years, but upon request of the parents who objected, particularly in the case of little girls, that the three scars were unsightly, the Health Department discontinued the use of three separate scarifications, and at the present time is using only one. Individual sealed capillary glass tubes are used instead of the bulk vaccine, for the reason that there is more danger of contaminating the bulk vaccine.

The vaccine is first deposited on the arm and then the scarification is made for the reason that it is easier to see the drop of vaccine than it is to see the scarification, particularly when the operator is working in a poorly lighted room.

It is deemed advisable in the vaccination of school children who are very active on the playground to cover the vaccination with sterile gauze, square, securely fastened with adhesive, with particular care being taken not to encircle the arm. The method used by this department is very rapid. School children are brought to the vaccination table and kept in line; the arm is scrubbed with ether by a nurse; the child is vaccinated by a physician; and the bandage is placed on the arm by the second nurse. Between four and five hundred children may be vaccinated in a forenoon by one physician, with the minimum disruption of class routine.

Out of more than 50,000 vaccinations in which this method was employed, only one case had a severe secondary infection, but with complete recovery and no ill effects.

In conclusion, I wish to state that I prefer the scarification method for group work in preference to all other types of vaccination, and that the single scarification does not produce a scar different from multiple scarification.

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Doctor Stevens (Closing).—A good method that meets the need of the private doctor may not be best suited for the use of a health department in a large city where epidemic and endemic smallpox have to be combated by a rather large number of different vaccinators. Here it is imperative to get immediate takes with safety. Here, too, a uniform method is highly desirable. The only objection is the number of scars. If carefully done, these will not be unsightly. I have had no experience in inserting the vaccine in the scapulary supraspinous region as advocated by Doctor Sippy, but do not see the contraindications that are so apparent when vaccinations are applied to the legs.

FRACTURES OF THE SPINE*

By James T. Watkins, M. D.
San Francisco

Discussion *by Rodney F. Atsatt, M. D., Santa Barbara; John C. Wilson, M. D., Los Angeles.*

AT the Lane Library lately, for the purposes of this paper, I looked over the literature for the past ten years dealing with fractures of the spine, uncomplicated by cord injuries. From these reports in English, French and German, and covering well over a thousand fractured spines, it is apparent that such fractures are common injuries; that fully half of them are simple compression fractures; that, except where an x-ray, and notably a lateral x-ray, is employed, they are all too frequently not recognized at the time of injury; that they constitute a heavy burden upon insurance carriers, and therefore, ultimately, upon industry; that if unrecognized, or inadequately treated, they may result in serious impairment of function; that this loss of function is usually not the result of injury to the vertebral body, but is the result of distorted bodily mechanics, *i. e.*, of bad posture and of involuntary efforts at correcting that posture. And this bad posture is the result of change in the mutual relations of the planes of the upper and lower surfaces of the bodies of the injured vertebrae.

In the time at my disposal I cannot possibly cover all types of spinal injury, so I shall confine my remarks to those which compose the majority, actually some 80 per cent, of such fractures.

INCIDENCE

A large majority of such fractures occur in adult males, although since the advent of the automobile, women are increasingly acquiring their quota, at present about 15 per cent. Of these simple compression fractures it is estimated that nearly 80 per cent occur between the eleventh dorsal and second lumbar vertebrae, inclusive; and of these nearly half involve the first lumbar vertebra. These 80 per cent, then, are the subject of this paper.

COMPLICATIONS

These are neurologic symptoms, and fractures of laminae of articular processes of the pedicles and spinous and transverse processes. Aside from the neurologic conditions, fractures of the articular processes are the most troublesome. Finally, injuries elsewhere, notably of the os calcis, may occur; and, in the presence of the graver injury, may be overlooked.

CAUSATION

Any condition or situation which will cause a hyperflexion of the spine, such as blows—actually thrusts—from above and behind, and falls in which the individual lands standing or sitting. Even sudden muscular contractions would appear to be capable of producing compression fractures. Doctor Wesson, who is with us today, sustained such a fracture.

Mechanism.—Crushing of the spongiosa of the anterior portion of the body of one or more vertebrae. I shall not touch on complicating dislocation, though they are probably the result of a diagonal thrust rather than of a simple downward and forward crush.

SYMPTOMS

In an admirable paper by Osgood, one of the many which I consulted in preparing this address, these are divided into early and late symptoms.

Early Symptoms.—At first, these may be masked by those of other fractures or by shock. In a medico-legal case in which I figured lately, with multiple fractures of the extremities, two compressions of the vertebrae were not discovered until nearly a year after the accident. Again, they may be so slight as to escape notice. Of these early symptoms, muscle spasm, with localized limitation of back motion, is *always* present. Tenderness to direct pressure over the spinous processes of the injured vertebrae is *almost* always present. Pain, definitely localized, may be present, but is sometimes absent. In all the cases that I have seen, there has invariably been a fairly localized feeling of weakness, however, even when actual pain was absent. Finally, very frequently marked distention of the abdomen may be a distressing symptom.[1]

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* Read at the twenty-ninth annual meeting of the Nevada State Medical Association, Reno, Nevada, September 23-24, 1932.

1 In the discussion elicited by this paper, Doctor Holcomb of Oakland directed attention to this very distressing abdominal distension which frequently accompanies spinal fractures, which I had included in my notes but failed to mention.

Late Symptoms.—Many years ago (on July 3, 1893, I think), Kümmel reported to the surgical society of Hamburg what he believed to be a rarefying osteitis of the spine (of traumatic origin) which presented three stages: (1) A stage of acute injury; (2) a stage of apparent convalescence; and (3) a stage in which there was a slowly developing kyphos and pain in the distribution of the nerves emerging from the spinal foramina at the site of injury. I recall this observation: Die Behandlung ist eine sehr dankbare—"The treatment is very gratifying." He got his patients well with plaster of paris jackets. This occurred in the year before Roentgen of Würzburg discovered the x-ray, and many years before lateral spinal pictures had become possible. I believe Kümmel was reporting what was really a series of unrecognized compression fractures; I have never seen a definite pathologic entity such as Kümmel, basing his opinion on his clinical findings, described.

DIAGNOSIS

"The key to diagnosis is suspicion." Every patient who has been forcibly doubled up, who has fallen a great distance, landing on his feet or on his buttocks, has a broken back until you have proved that he has not.

TREATMENT

Except in the matter of the Kümmel spine, where I am afraid I stand alone, there is no material divergence of opinion from what I have said among the many authorities I have consulted. In the matter of treatment, however, there is no such thing as unanimity of opinion. On the extremely conservative end we find surgeons who place their patients on firm beds, massage the back musculature, beginning with the fourth day following the accident; sit the patients up at the end of four weeks, and get them out of bed at the end of eight weeks. They never use plaster jackets nor braces. The number and excellence of the results they report is impressive. At the extreme of the swing of the pendulum to its radical end, we find surgeons who regularly fuse every spinal fracture. They are satisfied with their results, or they would not do it; but, on the other hand, in reviewing operative results, we find Eikenbarry of Seattle, who, among 128 claimants who had been subjected to spinal fusion, did not find one who had returned to his original occupation; and Gray of the Aetna Company, who had not seen a single individual whose spine had been subjected to operation who had not become a "life pensioner."

How can we explain these diametrically opposed methods of treatment employed by able and just men who are so convinced they are right that they make permanent record of their procedures and of their results? It must be that one or the other group, or both, lacks the faculty of judicially reviewing its own work. It must be that either one group or both are open to the criticism voiced by Sir James MacKenzie: that for them "a lack of guiding principles is responsible for (many) haphazard methods, and the result is, too often, that, though immense energy is expended, achievement is not commensurate with this 'expense.'"

Are there then any guiding principles applicable to the treatment of uncomplicated spinal fractures? I believe there are, and I further believe that they are the same broad, now universally accepted, principles which apply to the treatment of fractures elsewhere in the body. Let us try to enumerate them.

First, following any fracture of any bone, we bring the fractured ends into alignment and apposition and immobilize them.

Second, if a fracture enters into a joint, other things being equal, we immobilize that joint in that position most difficult for it in health to assume: abduction and elevation at the shoulder, full flexion at the elbow, full supination at the ankle, abduction and internal rotation at the hip, and so on. The knee would seem to be an exception to this rule.

Third, if a bone is impacted (a Colles's at the wrist, a femoral neck, or the upper end of the humerus), other things being equal, we disimpact it and then proceed in the usual way.

Fourth, if there is danger of ankylosis of a fractured joint, we immobilize in that position which will give a maximum of function should the ankylosis become a fact. Now, if these fundamental or basic principles of treatment are true of all other bones and joints, they should be equally true of the multiple bones and joints which, in their totality constitute the spinal column; bones which, because of their cancelous structure ought, *a priori*, to heal quickly and which, as a matter of fact, do heal quickly if given favorable opportunity to do so. The application to fractures of the spine of these fundamental principles underlying all bone setting constitutes my idea of proper treatment.

We noted, a moment ago, that aside from occasional nerve-root pains, the disability following a healed spinal fracture lies, not in the fracture itself, but in the uninjured portions of the column in which, in order to counterbalance the distortion caused by the cave-in of the anterior portion of a vertebra, compensatory curves are developed.

The reasons for these pains are found in the constriction of the vertebrae themselves, and notably in their articular and spinous processes. For, while they have the general configuration given in the descriptive anatomies, a more detailed study of vertebrae of a number of spinal columns will show that their articulations and processes apparently present endless individual variations in length, in pitch, in direction, etc. Indeed, I think it might be said that, just as our faces differ in detail, so, when we study them long enough, our spinal columns equally differ. But, while the still plastic spine of the growing child would seem to be capable of a considerable degree of accommodative readjustment, the same observation would not hold equally good of the spine which had attained to maturity. Nor, by the wildest stretch of the imagination, could Wolff's law be made to apply to the matter in hand.

Consequently, when by reason of the collapse of the front part of, say the second lumbar vertebra, the vertebrae above and below it meet at an angle of perhaps forty-five degrees, the compensatory lordosis above and below the fracture results in the body weight being removed in large part from the intervertebral disks, where it belongs; and transferred back to the articulations, laminae and spines, with resultant multiple sprains and ultimate chronic traumatic arthritis. The problem is even more complex than that; but what I have said is enough to indicate that to leave such a spine in that condition is to court grave disability.

But, to revert for a moment to the two extremes of treatment, I do not see, on the one hand, how the synostosing by operation of a few vertebral spines meets the mechanical problem involved; any more than, on the other hand, letting the patient with a deformed spine lie in bed till he is ready to get up, meets it. I believe we should follow the four cardinal principles of treatment already enunciated: that we should disimpact, remove the deforming factor of weight bearing, and maintain the posture most difficult in health to assume; which, in this case, is the posture in which, should ankylosis supervene, a maximum of function will be retained. This may be accomplished in several ways. Dr. John Dunlop of Pasadena places his patients prone, and practically "tosses them in a blanket." He reports an impressive list of cures. Doctor Rogers of Boston has devised a form of bed upon which the patients lie supine in hyperextension. By means of an attachment, a direct upward (that is corrective) thrust is exerted upon the kyphos and gradually increased till the latter is obliterated. Some years ago I tried to do the same thing with kyphosis secondary to tuberculosis; but I gave it up because the skin gave way before the kyphosis did.[3]

An objection, which, so far as I know, is hypothetical, has been made to the direct attack on the kyphos on the ground that an unrecognized fracture of a lamina, if pressed upon, might result in a fragment of bone being forced into the spinal canal. In view of the firm ligamentous anchors above and below such a lamina, such an argument does not impress me. However, it may be guarded against by taking 67½ degree lateral pictures of the spine; these throw the pedicles, laminae and articulations directly upon the plate, making injuries of them as easy to recognize as similar injuries elsewhere. I have nothing to say against other methods of procedure; but my personal predilection is for the immediate correction of the kyphos. Instead of Doctor Dunlop's blanket tossing, I place the patient prone upon two padded boxes, while assistants make moderate traction on head, arms, and legs. Then, astride of the patient, with my arms held stiffly, I place my hands at either side of the kyphos and, bending my knees, I gradually force the spine into hyperextension till I get a distinct crunch: I feel it and I hear it. My kyphos is then completely gone; I leave no trace of it. I know from my x-ray that my laminae are intact, and I could not push them in anyhow because my thrust is not exerted directly upon the laminae. Without moving the patient, I now pad generously, and over it apply the longest plaster of paris jacket I can, and fill in the hollows with reduplications of plaster of paris bandage. I have never carried the cast down to the knees, though I have read that I should do so.

[3] In the discussion, Doctor Holcomb of Oakland advocated making traction on head and feet and, at the same time, exerting an upward lift on the kyphos by means of a flannel bandage passed beneath it and up over the longitudinal bars of a Balkan frame.

AFTER-CARE

If there are no contraindications, beginning with the sixth day, I bivalve the cast, remove the posterior half, and try to anticipate muscle atrophy with massage and baking. If spots of tenderness are noted, after covering the skin with paraffin oil, they are carefully palpated to determine their nature. Should there prove to be sensitive pencil-like indurations in the course of the muscle fibers (the Muskelhärtungen of the Germans) they are worked on with increasing vigor until they disappear. And as soon as soreness has subsided I advise supervised efforts at contracting the back musculature. I feel very strongly that our efforts should be directed toward preventing the atrophy of disuse, rather than toward relieving it once we have allowed it to occur.

I have heard of cases where vertebral distortions which had been corrected had recurred. I believe this was to be attributed (1) to failure to care for the back muscles—the natural braces of the vertebral column—and (2) to allowing patients to sit up; a sitting patient, jacket or no jacket, flattens his lumbar spine. To verify this, apply a packet, cut a hole in it, and watch what happens when the patient sits down: flattening the lumbar spine throws the body weight forward upon the still ununited portion of the vertebral body.

By the time such a person is ready to stand up, he has a firm musculature and is habituated to a correct posture. In the early stages of convalescence, recumbency, with the spine supported in the posture it would assume while standing erect, is indicated. After eight weeks of such recumbency the patient may be got up, standing or walking around for short but gradually increasing intervals of time. Only after the sixteenth week should he be permitted to sit with a flat back.

CONCERNING SUPPORTS

I believe that as we come to recognize and to perfect the technique based upon the principles of treatment here set forth, we will more and more get away from external supports of any sort. The more intelligent and coöperative the patient, the greater will be our success in employing the nonbrace, noncast treatment, as some of the Germans are doing now. Thus far I have not had the courage wholly to do without them myself. If one is going to use an external support, the brace affords much better fixation of the spine

than does the plaster of Paris or similar jacket; but by reason of the direct pressure it exerts, it is correspondingly more mischievous in its effect on the erector musculature.

CONCERNING THE INDICATIONS FOR OPERATION

In the fresh spinal fracture where there is an increasing paralysis, straighten the spine and decompress by doing a laminectomy; but do not open the dura. In an old unrecognized or inadequately treated case with nerve root symptoms and possibly fractured articular facets, but without a generally disseminated arthritis, synostose the damaged vertebra to the uninjured vertebrae immediately above and immediately below it. To do more than this implies still further limiting the motion in a spine whose motion is already unduly limited.

THE TIME OF DISABILITY

In an uncomplicated case this should not be more than six months. I had one synostosed patient back at work, wearing a jacket, at the end of six weeks. Actually, our industrial cases average a year and a half. The late Doctor Hibbs wrote me that in adults synostosing operations should be followed by six to nine months' brace treatment, and that children took from nine months to a year.

Until comparatively lately I had adhered to the radical or operative school. The failure of patients to declare themselves relieved of their disabilities I interpreted to be one of the evils inseparable from compensation insurance. I now incline to hope that a more rational treatment will give a quicker and more nearly complete return to normal.

Medical Building, Hyde and Bush Streets.

DISCUSSION

Rodney F. Atsatt, M. D. (1421 State Street, Santa Barbara).—Doctor Watkin's paper on fractured spines brings out a viewpoint with which I am fully in accord, namely, that it is possible to treat fractured spines by a noncast, nonbrace procedure and have them well and walking and in no danger of recurrence in a much shorter time than is possible with the brace treatment. I personally have treated forty fractures in various portions of the spinal column in the following manner:

The patient is placed on a hyperextension bed, somewhat modified from that described by Doctor Rogers, for a period of eight to ten weeks; active exercises for the arms, legs, and back are begun at the end of the fourth week, though simple anterior tibial and quadriceps setting exercises may have started at once. During the period from four to eight weeks the strenuousness of the hyperextension exercises is increased, until at the end of eight to ten weeks the patient is able to stand and walk with strong, corded erector spinae muscles which act as the body's most efficient brace. I am very glad to hear someone else advocate this form of treatment, as opposed to the more radical procedures. I should like to agree with Doctor Holcomb that there is very apt to supervene, in fractures of the lower dorsal and lumbar spine, a very distressing paralytic ileus which is often difficult to relieve but can sometimes be helped by pilocarpin and eserin.

John C. Wilson, M. D. (1136 West Sixth Street, Los Angeles).—During the past decade the great amount of careful investigation carried on abroad and in this country has led to a better understanding of the anatomy, physiology and pathological physiology of the spinal column as a functional mechanism, and has led to the evolution of a rational treatment of spinal injuries.

Goldthwaite many years ago called attention to the importance of posture in body mechanics and has repeatedly given a clear exposition of this subject. Schmorl's investigations and careful studies of the nucleus pulposus, its expansile properties and relationship to spinal mechanics; Davis' investigation of the strength of the anterior spinal ligaments, the escape of these structures from injuries in compression fractures of the spine and the absolute protection which they afford against excessive hyperextension even though the vertebral bodies adjacent to them are crushed, have led to an entirely new concept in the treatment of compression fractures of the spine.

Less than ten years ago the question which always arose in the treatment of a spinal compression fracture was whether a fusion operation should be done or the injured vertebrae should be allowed to heal through simple immobilization in the position of deformity. Everyone who has had experience through this era of treatment can well remember the results which seemed to be the same regardless of the choice of treatment. Whether operative fixation was or was not done, the patient in the majority of cases complained of weakness and backache. In retrospect, better results could not be expected from a system of treatment which ignored the physiology of the spinal column as a whole; took no consideration of the nature of the fracture and dismissed the subject of body mechanics regarding the injured as a victim of a terrible calamity which nature must repair without assistance.

With the realization that (1) compression fractures of the vertebral bodies are impacted fractures, (2) that impaction of two or more vertebral bodies alters the physiological curve in whatever region of the spinal column it may occur, (3) that an altered curve in any region of the spine interferes with general body mechanics and must be compensated for elsewhere, (4) that impacted vertebral bodies may be disimpacted and the normal or a nearly normal contour restored by hyperextension, (5) that the anterior spinal ligaments afford protection against excessive hyperextension, it becomes clear that any adequate treatment of compression fractures of the spine, as Doctor Watkin's has emphasized, must produce an anatomical restoration of contour, maintain this restoration until healing has resulted and then restore as nearly a normal range of motion as is possible to the entire spinal column and normal musculature to support it.

The armamentarium used to accomplish this; whether it be at one sitting, as advocated by Davis and by Dunlap, or is carried over a period of days, as advocated by Rogers, is a matter for the individual surgeon to decide.

The recognition of the failure of any treatment which accepts a gross distortion of the physiological contour of the spinal column and the fixation of this deformity is a real advance in therapy. With the newer forms of treatment the injured can look for a return to active life with a minimum of residual pain.

*

Doctor Watkins (Closing).—I have to thank the gentlemen who discussed my paper for their expressions of approbation. I had expected to have to defend my position; but am pleasantly surprised to learn that, except in minor details, we are all agreed as to the proper treatment of uncomplicated spinal fractures.

FUNCTIONAL DISEASES OF THE INTESTINAL TRACT*

By FULLER BAILEY, M. D.
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DISCUSSION *by F. A. Speik, M.D., Los Angeles; Eugene S. Kilgore, M. D., San Francisco.*

FROM the earliest history of medicine one of the chief tools of the physician's armamentarium has been the cathartic. There are no other drugs which produce an effect so evident to the patient. Elimination in early medicine was the primary object of therapeusis as evidenced by the bleeding, sweating, and purging. We are reminded of the old saying, "I pukes 'em, I purge 'em, I sweats 'em, and if they die I lets 'em."

As a consequence of this elimination therapy, together with the growing intelligence of the public and the helpful newspaper advertisements of the patent medicine vender, this particular form of therapy has been largely removed from the physician and adopted by the layman himself.

The common cold, the stomach ache, the fever, the headache, and that tired feeling are all treated by the patient himself with that good old remedy, the cathartic. But as the layman progresses in thought, so, too, does the physician. The medical profession now realizes that infection cannot be eliminated through a bowel movement. Also that it is well to determine the most likely cause of the stomach ache before administering a cathartic.

The theory of autointoxication, which appeals so strongly to the imagination and sounds so logical, will not withstand the prying eyes of science. That now popular idea of increased pep and increased longevity through bigger and better bowel movements no longer appeals to the scientific imagination.

Be that as it may, this is the age of self-medication and it behooves physicians to open their eyes to the fact that continued medication is not good for the human race in general, nor is it necessary. It is my firm conviction that the outstanding cause of gastro-intestinal disturbance today is the frequent use of cathartics.

PHYSIOLOGY OF INTESTINAL TRACT

With this in mind, then, let us briefly review the more recent ideas of the physiology of the intestinal tract in order to better understand some of the vagaries of that complex mechanism.

The sympathetic nerve supply for the stomach and small intestines is conveyed by the splanchnic nerves originating in the lower dorsal and upper lumbar region with the cell station in the solar plexus. Balanced against this is the parasympathetic supply from the vagus.

The sympathetic nerves supplying the colon and rectum originate from the lower lumbar region with the cell station in the inferior mesenteric ganglion. The parasympathetic nerves for this area originate from the sacral cord. The vagal and sacral nerves end in ganglion cells between the circular and longitudinal muscle coats of the small and large intestine and constitute the plexus mesentericus of Auerbach.

Sympathetic or splanchnic stimulation diminishes tone and inhibits peristalsis, while parasympathetic stimulation increases tone and increases peristalsis. The balance of these two systems, one against the other, largely controls the activity of the intestine.

The types of stimuli to which these nerves respond are chemical, mechanical, nervous, and thermal.

Chemical substances circulating in the blood stream may influence the intestinal movements by stimulation of Auerbach's plexus. As an example of this we have bacterial toxins causing diarrhea. The frequent gastro-intestinal upset in children accompanying sore throat is well known by all of us. The diarrhea and intestinal disturbances accompanying la grippe or influenza are so common that the diagnosis of "intestinal flu" is frequently made, although lesions in the gastro-intestinal tract ascribable to influenza are not demonstrable.

The hormones secreted by certain glands may act similarly by stimulating Auerbach's plexus. As an example of this we have the diarrhea which frequently accompanies hyperthyroidism and the absence of stimulation giving rise to the constipation accompanying hypothyroidism. Adrenalin has an inhibitory action on Auerbach's plexus and constipation has been noted after its frequent administration.

Chemical stimulants are present in foods or result from their digestion by ferments or bacterial action in the alimentary canal. The chief foods supplying these stimulants are the fruits, vegetables, and sugars. Acetic, butyric, tartaric, citric, and lactic acids are contained in the fruits and vegetables or produced from them in their final digestion.

Mechanical stimulation of the intestinal tract occurs from the bulky residue of the food. Indigestible and undigested food remnants, such as cellulose, are the chief sources of bulk in the stool. The vegetable foods have a larger residue than the animal foods and lead to more secretion in the intestinal tract. Likewise, they favor the development of a greater number of bacteria.

Nervous stimulation originating in the brain gives rise to diarrhea, such as that following emotion or excitement. This may commonly be observed in students going to examinations or in soldiers in war. Diarrheas and intestinal upsets as a result of worry have been especially prevalent the past two years and are frequently unrecognized by physician or patient.

Reflex stimulation influencing the intestinal movements arises chiefly in the stomach and duodenum. In the normal course of digestion the food is retained in the distal ileum for one to one and one-half hours by the ileocolic sphincter, to allow for its complete digestion and absorption before the residue is allowed to pass to the colon. Distention of the stomach by a meal causes a re-

* Read before the twenty-ninth annual session of the Nevada State Medical Association, Reno, Nevada, September 23–24, 1932.

flex relaxation of the ileocolic sphincter, allowing the ileum to empty into the colon before the new meal arrives. This is called the gastro-ileal reflex.

Contrary to former teaching, the peristalsis in the colon is never vigorous under normal conditions. The greatest progress of the feces through the colon is the result of mass peristalsis following a meal. The reflex responsible for this mass peristalsis is known as the gastrocolic reflex.

Patients with intestinal disturbance frequently complain of distress such as gas, bloating, fullness or cramping immediately or shortly after meals. This distress is due to abnormal mass peristalsis in the colon and is to be distinguished from ulcer distress, which occurs one to three hours after eating.

Reflex inhibition of peristalsis occurs from stimulation of the peritoneum. Exposure of the peritoneum during laparotomy causes reflex inhibition of peristalsis. Paralysis and distention of the intestines after operation are frequently the result of reflex inhibition from handling the viscera. Reflex inhibition of peristalsis as a result of peritonitis or perforation of a viscus is nature's method of protection against spread of the infection.

The response of intestinal peristalsis to thermal stimulation is well known. Cold commonly stimulates peristalsis, such as a glass of cold water before breakfast or the morning cold shower. Heat inhibits peristalsis, probably reflexly, as evidenced by the relief of intestinal cramps or severe diarrhea by the application of heat to the abdomen.

The small intestine is the digestive organ of the body and its chief functions are the digestion and absorption of the food. The chief functions of the large intestine are the absorption of water and the elimination of the feces. The feces are discharged into the cecum in a watery suspension. The absorption of the water, with subsequent formation of the stool, takes place largely in the cecum, but is completed in the descending colon. It is abnormal to obtain succussion over any area of the colon except the cecum.

Ordinarily the entire large intestine below the splenic flexure is emptied with a bowel movement. This may be brought about in the morning by the regular habit of the individual or by some stimulation such as the activity of getting dressed, by a glass of cold water before breakfast, by breakfast itself, or by a morning smoke.

STOOL ANALYSIS

Many patients become alarmed when they believe the stool to be insufficient in amount. It is difficult to say what the quantity of the stool should be, because of individual variations. When we consider that one-third to one-half the dry weight of the stool is made up of bacteria, we realize that even a smaller amount is due to food residue.

The consistency of the stool, rather than the quantity, determines whether it is satisfactory or not. If the stool is soft and formed and there is no residual stool in the rectum on digital examination, there need be no worry about the quantity. Should the patient persist in worrying after this assurance, he may be told, as did one physician, to "be like the dog and never look behind him."

It is interesting to note that only about 5 per cent of the dry substance of meat, eggs, cereals, and white bread appears in the stool. From 15 to 20 per cent of the dry weight of vegetables appears in the stool, due to the increased amount of cellulose in them.

Very little is taught about stool analysis in our medical schools today. However, stool analysis is of the utmost importance in determining the functional integrity of the intestinal tract.

It is important to note the consistency, formation, and reaction of the stool. The presence of undigested starch, meat fibers, and fat signifies disturbance of digestion in the small intestine. Mucus is the normal secretion of the colon and if present in excess indicates abnormal activity of the mucous glands, but not necessarily from organic disease. The excessive use of enemas or cathartics may result in abnormal amounts of mucus in the stools. The presence of blood and pus signifies organic disease.

CONSTIPATION

Constipation may be defined as the passing of or accumulation of a hard and dry stool. A normal individual may have two or three bowel movements in a day or one bowel movement every two or three days. To set an arbitrary standard and try to make all individuals conform to it is not scientific. It is fair to say, however, that the average for normal individuals is one bowel movement a day. The normal stool should be of the consistency of butter at room temperature, and about the size of a banana with the peeling removed.

The fear of dire consequences if the bowels fail to move for a single day is so implanted in the minds of some individuals that they become ill from the worry of it. Physicians frequently see patients who have gone for days with no bowel movement without harmful effects. Strong records a case of a laborer, age twenty-six, who at the age of two often went three weeks without a bowel movement. The movements became less frequent and at the age of twenty-two he was having a movement about every six months. The bowel movement was attended by cramps, pain, and vomiting, and on one occasion the movement weighed forty pounds. The longest interval between bowel movements was eight months and sixteen days.

By colic constipation is understood a condition in which the passage of feces through some part of the colon is delayed, but the act of defecation is normal. This may result from deficient motor activity of the colon, due to congenitally thin musculature (rare); atrophic intestinal muscle in the aged; disturbance of muscle nutrition, as in severe anemia; or in febrile conditions, due to the bland type of diet taken and the impaired secretion of intestinal juices. It may also result from diminished activity of the reflexes. If the appetite

is poor and very little is eaten, the gastro-colic and gastro-ileal reflexes are impaired. Without these reflexes there is diminution of the mass peristalsis in the colon. If the diet contains too little cellulose, there is insufficient reflex stimulation to the bowel wall and constipation results. Diminution in the reflex excitability of the colon may result from the long-continued use of strong stimulants such as cathartics.

As before stated, painful sensory stimuli, especially of the abdominal and pelvic viscera, produce reflex inhibition of the gastro-intestinal movements. As examples of this we have the distention and obstinate constipation in gall-bladder and renal colic. The constipation which so frequently accompanies an attack of peptic ulcer distress is attributable to this cause.

Spasm of the colon, as the result of lead or nicotine poisoning, irritating foods, and cathartics, may lead to interference with the passage of the feces. This condition occurs usually in the descending colon and, when present, the colon may be palpated as a contracted cord.

Inability of the rectum to empty itself leads to the accumulation of hard, dry fecal masses and difficult bowel movements. In this condition the fecal masses may be palpated in the descending colon or may be felt on rectal examination. This may result from laziness, ignorance, fear of pain on defecation, or neglect of the desire for a bowel movement. As the stool accumulates, a feeling of distress and pressure accompanies it. If neglected for long, diarrhea with fecal incontinence may result.

Having considered the various causes of constipation, let me emphatically state that the average patient complaining of constipation does not know the meaning of the word. When asked what he means by constipation, almost regularly he states that his bowels will not move without a cathartic. When asked how long it has been since he had a hard and dry stool, the regular reply is, "Oh, I never let myself get that way." The very suggestion of stopping the cathartics strikes fear to his heart—the fear of headaches, of biliousness, of dullness of mind, of intoxication. So thoroughly has the idea of intoxication as a result of missing a bowel movement been implanted, that he has never given his bowels the opportunity to move of their own accord. It becomes, therefore, the duty of the physician to relieve the patient's mind of these false ideas by logical explanation if he wishes to receive full coöperation in overcoming the constipation.

INTESTINAL INTOXICATION

Let us for a moment look critically at this problem of intestinal intoxication. It is known that if the small intestine is obstructed in the upper part, severe symptoms of intoxication set in and death results in a few days if it is not relieved. In these cases a proteose has been isolated from the contents of the small intestine which is not present in the normal bowel. When injected intravenously in animals, this proteose produces severe and fatal intoxication with vomiting, prostration, and bloody diarrhea. Given by mouth, however, this substance produces no symptoms and is excreted unchanged in the feces. This experiment proves that the intestinal mucous membrane is impervious to the proteose and suggests that the poison is formed in the mucous membrane itself, some of it passing directly into the blood stream and producing the symptoms.

If the terminal ileum is anastomosed to the rectum and the intervening isolated portion of the colon is closed, no evidence of intoxication appears. Later the closed colon is found filled with a mass having the appearance of normal feces. No toxic proteose can be extracted from this fecal content, showing that the toxic body appears to develop in the small intestine only.

These experiments demonstrate that poisons may be generated in the small intestine in cases of obstruction which when absorbed cause symptoms of intoxication. It is also recognized that numerous bacteria normally inhabit man's intestinal canal, which, under certain conditions, can produce disease.

To prove the theory of intestinal intoxication from constipation, however, it must be shown that a toxin is formed by bacterial or enzyme action in the colon and in amounts sufficient to produce poisoning. It must be shown that this toxin can be absorbed through the intestinal mucous membrane and that it is not broken down into harmless bodies in the liver or elsewhere. Furthermore, it must be demonstrated that repeated injection of this toxin into the blood stream will produce symptoms similar to those of constipation. It is only necessary to define these criteria to show how far the theory is from proof.

In considering the possible causes of poisoning, there is no evidence that the products of normal digestion produce poisonous effects. Nor is there strong evidence that a high protein diet is harmful. The Eskimos eat eight pounds of meat or more daily during the whaling season and are said to be a healthy race.

The products of fermentation of carbohydrates tend rather to cause diarrhea than constipation, and the fermentative type of stool is rare in the truly constipated individual.

As a result of putrefaction in the colon poisonous bodies as indol, phenol and skatol are formed. These are absorbed to some extent and excreted in the urine conjugated with sulphate. The feces normally contain about 60 milligrams of indol per 100 grams of fresh feces. In normal individuals from 6 to 20 milligrams of indol in the form of indican is excreted in the urine daily, showing that relatively little absorption of indol occurs. Retention of feces for days or weeks does not necessarily increase the urinary indican excretion. Large amounts of indican in the urine may occur in liver disease, in renal insufficiency, and in normal individuals. It would seem, then, that urinary indican is not a precise index of intestinal putrefaction. One gram of indol, more than is ever found in the intestine, has been given by mouth to man without ill effect. Two grams when

given by mouth are said to produce headache, dizziness, and fatigue.

The blood phenol averages 5 milligrams per cent and is not definitely increased in any disease.

Bacteria are extremely numerous in the terminal ileum and ascending colon where the bowel contents are liquid and form a suitable culture media. In the distal colon, owing to a drying up of the feces, these bacteria tend to die. The intestinal flora are fairly constant in make-up and are probably useful to the host in keeping out harmful bacteria. None of those commonly found form soluble toxins and few of them undergo dissolution to form endotoxins. It is recognized that toxic absorption occurs much more readily from fluid feces than from hard and dried material. It is therefore quite possible that purgation, by keeping the feces in the entire canal fluid, may be more harmful than the constipation itself.

As to the absorption of living bacteria from the intestinal tract, Adami showed that cultures of intestinal bacteria may be obtained from lymph nodes of the alimentary tract of normal animals and that these bacteria may often be found in other organs. These organisms may pass by way of the lymphatics to the blood stream but do not accumulate, as they are destroyed by the liver and spleen. It is conceivable that under certain conditions bacteria may be absorbed in excessive numbers. They may collect in various situations where they are broken down liberating toxins which tend to damage the organ. It has been suggested that types of arthritis may thus result from what Adami calls subinfection. Rosenow suggests that organisms of very low virulence may actually grow in the invaded sites as a latent infection.

It is therefore clear that the evidence for intoxication from toxins or bacteria absorbed from the intestine in cases of constipation is slight. It is possible, however, that such absorption may occur more readily if the intestinal mucosa is abnormal. Starvation and purgation are said to facilitate the passage of bacteria through the intestinal mucous membrane.

MECHANICAL AND REFLEX FACTORS

Let us consider the possibility of mechanical or reflex effects in the production of symptoms of constipation.

Donaldson, experimenting with normal men whose bowels moved once or twice daily, fed a normal diet and had them withhold defecation for ninety hours. Each developed symptoms regarded as characteristic of intestinal intoxication: foul breath, furred tongue, impaired appetite, flatulence, nausea, depression, restlessness, headache, insomnia, and irritability. X-ray showed the ileum to be empty and that the feces had accumulated in the colon. After an enema and evacuation of the bowels the distress was promptly relieved and the subjects felt normal within an hour. This short period of recovery is conclusive evidence that the symptoms were not the result of intoxication through the blood stream, as a toxin could not be eliminated so rapidly. The mechanical distention of the rectum in all probability produces the symptoms reflexly, as the same symptoms may be produced by packing the rectum with cotton or wool.

Sensory impulses from the bowel are well known to influence the emotions and mental processes, such as sleepiness after a large meal, irritability and lack of concentration when hungry. Also the type of patient who is subject to the so-called "autointoxication" is usually keenly aware of what goes on in his body and responds strongly to visceral stimuli.

CONCLUSIONS

After eliminating organic disease as a cause of the constipation or distress by careful history, physical examination, laboratory and x-ray studies, the treatment is largely through education, diet, and the regulation of the habits of the individual. It is surprising how large a number of patients who believe themselves to be constipated and who resort to daily laxatives or enemas, will be found to have normal bowel movements or even diarrhea when the laxatives and enemas are discontinued and a normal diet resumed. This usually necessitates waiting for two or three days for the normal accumulation of feces in the colon. This period of waiting is the trying one for the individual who fears the effects of constipation. However, having conquered this fear through confident assurance and encouragement, the results are often surprisingly satisfactory.

In overcoming the distress which so frequently accompanies disturbances of function of the intestinal tract, the removal of irritants is of first importance. The use of cathartics, mineral oil, large enemas, bran, and yeast should be discontinued. Among the chief bowel irritants in the diet are the raw fruits and fruit juices, salads composed of raw vegetables, and the coarser cooked vegetables such as corn, cabbage, and Brussels sprouts.

If, after removal of these irritants, distress symptoms such as fullness, bloating, and pain immediately after eating persist, mild sedatives such as bromids or luminal are indicated. These drugs lower the threshhold of reflex irritability. Also the administration of hot packs to the abdomen for a short time after meals is often beneficial in relieving distress.

It is our practice to advise the taking of three ounces of olive oil as a retention enema every second night or one-half to one pint of warm water every second morning if the bowels have failed to move in the interim. It is not advisable to allow the bowels to go longer than two days unless the patient is controlled by daily rectal examinations to see that there is no accumulation of hard fecal masses. Should fecal impaction be allowed to occur, the confidence of the patient may be lost.

The establishment of a normal habit time of going to stool is important. As we have said before, probably the best time is in the morning after breakfast. Regular daily exercise should be advised, as it is not only good for the bowels but is excellent for the patient's general health.

In conclusion let me say that this type of patient is a frequent caller on the physician. By the application of time and patience, together with the physiologic principles outlined, results can be obtained. There is no more grateful patient than that chronic sufferer who has been relieved of his distress and has been taught how to regulate his bowels without resort to abnormal means. To him the day of miracles is not past.

9 Exchange Place.

DISCUSSION

F. A. Speik, M. D. (800 Auditorium Building, Los Angeles).—The disproved theory of autointoxication needs to be made known to the public. Many persons do not know that the diagnosis of autointoxication is evidence of lack of knowledge on the part of the physician.

The outstanding causes of intestinal disturbance are probably the cathartic, the enema, and the roughage craze in diet. The cathartic, however, does not affect the stomach so much.

The caliber, as well as the consistency, is the criteria on which to judge the sufficiency of the stool. Mucus in the stool denotes either nature's attempt to protect the colon from a hard, dry stool, or its attempt to lubricate the colon walls, which are in apposition in event the colon is emptied sooner than normal. At times mucus is partly caused by irritant enemas given, which empty the tract before normal time. High colonic flushings and frequent enemas are harmful to the normal mucosa.

A patient is not constipated unless he has a hard, dry stool. As Doctor Bailey states, the amount or frequency of the stool are not criteria for such diagnosis.

The patient who judges his elimination by the amount or frequency of the stool is making business for the patent medicine venders. The doctor gets him after he has spent his money and gotten his intestine into such a state that it takes weeks and months to correct the pathologic function.

I can hardly imagine the forty-pound bowel movement after eight and one-half months of no evacuation.

The use of the Sippy bowel powders and of psylla seeds is not mentioned in the paper. Their use is an aid to this type of patient.

*

E. S. Kilgore, M. D. (490 Post Street, San Francisco).—That happy laborer with the regular, semi-annual forty-pound evacuation should really be introduced to the great American pill-worshiping public. And the realization that our race existed long before the advent of diet reformers and nationally advertised cathartics would also be very salutary for most persons. Doctor Bailey's back to nature advice can be heartily endorsed in general principle; but I am sure he would agree that, like other good rules, it has its exceptions. For many city folks, life is necessarily far removed from nature, and for some of them it has seemed to me impracticable to insist on purely natural dietary and bowel habits. The diet of primitive man must have been very coarse in texture, and yet, as Doctor Bailey makes clear, we find very commonly that in the spastic type of constipation the highly artificial smooth diet is more conducive to bowel regularity and comfort. And while condemning the wholesale and indiscriminate use of cathartics, we must frankly admit that many an old habitué remains perfectly happy so long as he takes his mild laxative pill every night and is decidedly uncomfortable if he omits it, and that after many years thus lived he does not have to increase his dose, and shows no evidence of harm from the practice. To combat such an apparently benign addiction has always seemed to me quixotic. The patient with constipation, like all others, should be considered individually, and his treatment prescribed without subservience to any rule, however laudable the rule might be in most cases.

SIGNIFICANCE OF OCCULT BLOOD IN STOOLS BY THE BENZIDIN METHOD*

By John F. Quinlan, M. D.
San Francisco

WHEN blood leaves the vascular system in quantity it is grossly obvious; when the quantity is minute and subvisible it is occult, requiring the microscope, spectroscope, or chemical test for its detection.

CHEMICAL TESTS FOR OCCULT BLOOD

Fundamentally, there are few chemical tests for the detection of occult blood, the many others being but modifications of them. The most frequently employed are the benzidin, guaiac, and the amidopyrin color reactions.[3,5,9] Of these tests, the benzidin is the most dependable.[1,2,8] It is extremely sensitive, and this sensitiveness is its only failing; it consistently detects blood in quantities clinically insignificant.[1,2] For this reason the cruder techniques may be preferred. Of these techniques the "dry," "glass slide" Wagner modification is one of the most serviceable because of its ease, rapidity, cleanliness, and reliability:[2] to a match-head quantity of benzidin crystals are added, in order, two cubic centimeters of glacial acetic acid and twenty drops of hydrogen peroxid. A few drops of this solution are poured over a fecal smear on a slide. A further simplification is effected in the following procedure:[10] to a few benzidin crystals on a slide are added three drops of glacial acetic acid and two drops of hydrogen peroxid. These are stirred together, and then a match-head quantity of feces is stirred into the fluid. The color reaction may be green, bluish-green, or blue, depending upon the concentration of the hemoglobin. The quality, quantity, and order of addition of the reagents are factors in the dependability of the test, and so is the cleanliness of the glassware.[4]

REACTIONS OF FOODS AND MEDICAMENTS

It is important to know the reaction of various foods and medicaments to this test. The benzidin test reacts positively to raw vegetables, raw wheat flour, corn, oatmeal, potatoes, carrots, parsnips, and squash.[5,7] After cooking they react negatively. All meats, whether cooked or raw, react positively. Fish, including shellfish, raw, fresh, or pickeled, reacts positively: the reaction is weakened by cooking; and, after ingestion, the stools are usually negative. Eggs react negatively. Blaud's pills are positive: but two grams daily, after ingestion, give negative results in the stools.[5,6,7] Using the Wagner modification, the reaction is positive with cooked meat and negative with Blaud's, C. C., and A. B. & S. pills, bismuth subnitrate, tincture of ferric chlorid, potassium iodid, and extract of cascara sagrada.[1] We have found the test to be negative to ferrous sulphate and aqueous ferric chlorid, as well as cupric and cuprous sulphate, liver extract (Lilly and Wilson) and thyroid extract (Parke, Davis); and positive to ventriculin

* From the Medical Service of Mary's Help Hospital.

(Parke, Davis) and thyroid extract (Lilly) on repeated examinations with a benzidin solution positive to blood as a control.

Of the above list, meat is the only item of clinical importance. What is its fate after ingestion? Does it modify or nullify the test in the stools? Some investigators report that an ordinary meat diet rarely gives a positive benzidin test.[1,5,6,7] Yet, after the ingestion of ten grams of scraped raw meat, but not less (using a guaiac procedure), a positive reaction is obtained.[6] The guaiac test is less sensitive than the benzidin; and the ordinary diet contains much more than ten grams of meat. Again, after a two-day raw meat diet, the stools are positive to the benzidin and guaiac test, but they remain positive to benzidin seventy-two hours longer than to guaiac.[5]

SCOPE OF THIS STUDY

To determine the frequency of its appearance and its relation to the presence of meat as "muscle fibers," the stools of forty patients on general diets were examined for occult blood by the benzidin method, using the Wagner modification.

With occult blood	34	85%	
and muscle fibers,	15		50%
or blood cells	2		
Without occult blood	6	15%	
with muscle fibers	1		17%

Of the total number, the stools of thirty-four, or 85 per cent, reacted positively; and of these, seventeen, or 50 per cent, contained muscle fibers or blood cells as a possible modifying factor, whereas it appeared in only one of six cases, or 17 per cent, of stools reacting negatively.

The frequency with which muscle fibers appeared in conjunction with a positive benzidin test led us to carry the experiment further. Repeated stools of forty-three additional patients on a diet excluding meat, fish, and soups for a variable number of days were examined. The results, as outlined in the tables submitted, fell into three groups: (1) muscle fibers appearing neither before nor after the diet period; (2) muscle fibers appearing before, but not afterward; (3) muscle fibers appearing before and after.

Except in the few cases where the pathology was considered accountable, epistaxis, hemorrhoids, duodenal ulcer, gastric carcinoma, pyloric ulcer, or mucous hypertrophy of stomach, the benzidin test was invariably altered by the diet, being rendered negative in eighteen cases and practically so (one plus reaction) in eight others.

In this group, though the occult blood reaction was invariably modified by the diet, the stools were not freed of muscle fibers. Neither was the reaction so decidedly altered, nor as frequently, as

TABLE 1.— *Muscle Fibers Appearing Neither Before Nor After the Diet Period*

Reaction Intensity		Diet Period	Diagnosis
Before	After	Days	
4°	3°	5	Epistaxis
3°	1°	5	Hemorrhoids
3°	1°	1	Rheumatic syndrome with splenomegaly
3°	0°	4	Cholecystitis
3°	2°	5	Duodenal ulcer
2°	0°	4	Cholecystitis: hypertension
4°	4°	4	Carcinoma stomach
3°	0°	10	Cholecystitis
3°	0°	6	Retroverted uterus: hypothyroidism
3°	0°	7	Nephritis with anemia
4°	1°	7	Nephritis
1°	0°	5	Cholecystitis
2°	0°	3	Constipation

TABLE 2.—*Muscle Fibers Appearing Before, but Not After Diet Period*

Reaction Intensity		Diet Period	Diagnosis
Before	After	Days	
0°	0°	5	Cardiovascular disease
4°	1°	4	Cholecystitis
4°	0°	3	Postinfluenzal asthenia
4°	1°	3	Arteriosclerosis: hypertension
1°	0°	5	Cholecystitis
4°	4°	6	Pyloric ulcer
3°	0°	6	Hemorrhoids: hypothyroidism
4°	0°	24	Chronic malaria with hepatosplenomegaly
4°	1°	7	Menopause
3°	4°	6	Mucous hypertrophy stomach
3°	0°	7	Cholecystitis
4°	1°	12	Hypothyroidism
3°	1°	3	Arteriosclerosis
1°	0°	9	Cholecystitis

TABLE 2b.—*Muscle Fibers and Blood Cells Appearing Before but Not After Diet Period*

Reaction Intensity		Diet Period	Diagnosis
Before	After	Days	
4°	0°	15	Menopause
4°	0°	7	Syphilis stomach?
3°	0°	6	Cholecystitis
4°	0°	7	Menses
3°	0°	6	Arteriosclerosis

TABLE 3.—*Muscle Fibers Appearing Both Before and After Diet Period*

Reaction Intensity				Diet Period	Diagnosis
Before	M.F.	After	M.F.	Days	
4°	none	2°	few	14	Epistaxis
4°	rare	2°	few	?	Cardiorenal
2°	few	1°	few	4	Cholecystitis
3°	few	2°	few	5	?
4°	few	1°	rare	6	Hypertension
3°	few	1°	rare	10	Hemorrhoids
3°	none	2°	few	7	Cholecystitis
4°	few	0°	rare	4	Depressive psychosis; Mesenteric tumor?
4°	few	3°	few	3	?
4°	few	1°	few	4	Arteriosclerosis
4°	none	2°	few	3	Hepatomegaly

Stools (after diet)	No.	Reaction Changes			
		Neg.	%	2°	%
With muscle fibers	11	1	9	6	55
Without muscle fibers	32	18	56	23	72

it was in the groups preceding wherein muscle fibers were either not present or had disappeared.

In these stools wherein the reaction was changed from positive to negative, the mean period required was between 5 to 7 days, and the average time was 7.3 days.

Days	3	4	5	6	7	9	15	24
Stools	2	2	3	4	4	1	1	1

If the group is shifted to include reactions showing a change of two degrees or more, the mean period lies between 3 to 7 days, and the average time is 6.7 days.

Days	1	3	4	5	6	7	12	15	24
Stools	1	4	3	2	4	6	1	1	1

OTHER FACTORS AFFECTING THE TEST

Other conditions besides the presence of muscle fibers in the stools affect the dependability of the test. It is invalidated by affections of the nasopharynx, mouth, and anus, in which bleeding may play a part; as in epistaxis, tonsillitis, pyorrhea, hemorrhoids, ulcers, and fissures. Though many other diseases in our group are accompanied by a positive reaction, it may be reasonably concluded, from the changes noted under the conditions followed, that the reaction would be negative if the diet was adhered to for a sufficiently long period.

CLINICAL APPLICATION OF THE TEST

In its clinical application Gregerson has found the test, by the Wagner modification, to be constantly positive in carcinoma of the stomach, intermittently positive in ulcer, and negative in uncomplicated chronic gastritis, achylia, colitis, simple dyspepsia and constipation, nephritis, and cirrhosis of the liver. In carcinoma, however, the test was positive only in about 85 per cent of the cases. With this statement of Gregerson our findings tend to agree: of four cases, one proved negative—and without dieting.

COMMENT

The conditions under which the study was conducted were ideal from a clinical standpoint. Clinic patients afford a fair comparison of what may be expected of patients in private practice in regard to coöperation: we may have their word for it, but actually it is too frequently absent. Many conflicting results, though given some weight, must be discounted on this score—meat persisting in the stools while patients are on a meat-free diet. The "fishing" by which the specimens are obtained is revolting to too many temperaments to expect coöperation from all of them.

CONCLUSIONS

A meat diet very definitely affects the presence of occult blood in the stools by the benzidin method. To eliminate diet as a factor affecting the presence of occult blood by the benzidin method, meat, meat-soups, and fish must be excluded therefrom.

The dependability of the benzidin test is appreciably affected when meat fibers are present in stools.

The time required to render the stools negative for occult blood by the benzidin method, in the absence of accountable pathology, varies between five to seven days on a meat-free diet.

The benzidin test has a negative value generally, and a positive value only in cases of gastrointestinal carcinoma and peptic ulcer.

When the natural antipathy of many patients is considered, as well as the factors that must be eliminated to render the benzidin test valid, and the time required to effect it, its use becomes very restricted. The factors are not readily controlled outside of hospital practice. The test is too often alternately positive and negative in cases other than carcinoma or ulcer. With these two exceptions, and only under the conditions above described, it becomes a mere diagnostic frill, and is not justified as a routine procedure.

Mary's Help Hospital.

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THE LURE OF MEDICAL HISTORY*

THOMAS AQUINAS

(1225 or 1227-1274 A. D.)

By Felix Cunha, M. D.
San Francisco

THE accompanying illustration represents a facsimile of the first page of the collected works of Thomas Aquinas, priest, philosopher, physician, of the thirteenth century, undoubtedly the most famous of his time.

The book itself is one of the very earliest of the Swiss printings by Berthold Ruppel of Basel, a famed typographer of the time. It is a reprint of manuscripts, two of which bear the date 1468; but it is uncertain whether the book appeared before or after this date. Ruppel was a contempo-

* A Twenty-five Years Ago column, made up of excerpts from the official journal of the California Medical Association of twenty-five years ago, is printed in each issue of California and Western Medicine. The column is one of the regular features of the Miscellany Department of California and Western Medicine, and its page number will be found on the front cover index.

First page from Thomas Aquinas—Summa Theologica. Basle—Ruppel ca. 1468.

rary of Gutenberg, and this particular volume is one of the existing examples of the type of work done by the German typographer and his fellow craftsmen.

The first page, as illustrated here, shows a flowered border done in a pen drawing, and in the lower part of the sketch a monkey. The significance of this is not understood. The entire drawing is the work of some cloistered monk. The illumination is particularly interesting, as the elaborate details in the letter "A" beginning each paragraph show. The printing is done on vellum.

The binding of the book is odd in that it is not of leather or skin, but is constructed of pages of incunabula of the time, pasted together to form thick boards. The back is of brown leather, with curious markings.

Another edition of the same work is described as having been printed by Peter Schoffer in Mainz in 1467. It is the first authentically dated edition, and represents the first book printed by Schoffer, another master typographer, contemporary of Gutenberg. This edition and that of Ruppel's, described above, are exceedingly rare, and so far as known, only two copies are in the United States.

As to Thomas Aquinas himself, there is little in the literature describing him, except from a purely ecclesiastical point of view. He was born near Aquino about 1227, and came from one of the most noble and eminent families of Europe. On his father's side he was related to the Emperor of Germany, Frederick I, and on his mother's side to Tancred, who had conquered that part of Italy known as the Two Sicilies and ruled over this region. He had, therefore, a legitimate claim to the title of prince.

Very early in life he was sent to a famous monastery, Monte Cassino, to begin his studies. This monastery possessed a great collection of scientific manuscripts, and unabated work was carried on to extend the knowledge already gathered and to add to this knowledge by laborious and tedious study and interpretation of the classics. Constant additions and gifts had made this collection, in its time, the most precious in all Europe. After spending five years in this monastery he was sent to the University of Naples, where he remained for two years, and then entered a Dominican cloister.

The science and medicine of the Middle Ages rested in the hands of the Dominicans, because it was through their laborious work in the preparation of manuscripts and the translating and interpreting of existing knowledge, as well as the careful guarding and transmission of these manuscripts in the Order, that finally they were made available for print as soon as the press was invented. This was the link between the medicine which had gone before and that which came after. The second link was to come later, and consisted of the translation from the "dead languages" into the modern.

Essentially, Thomas Aquinas contributed nothing new to the ideas of the day as to medicine, nor did he cause any upheaval in the medical thought then prevalent. Philosophy and medicine were considered inseparable, and the speculations of these monks in the realm of philosophy were closely tied to the field of medicine.

Two medical "dicta" were announced by Thomas Aquinas, and to these he adhered. They were not new—merely a repetition of what had been announced by others. One was that the body was formed by the junction of material and spiritual principles, that man consisted essentially of a spiritual mind united to a material body. The other was in his belief in the "philosopher's stone," or "great elixir," for which all scientists and philosophers then searched. He described it as "that medicine which taketh away all impurities and corruption of a baser metal, so as to make it into purest silver and gold, and is thought by wise men to be able to wholly remove the corruption of the human body and prolong life for years."

He is mentioned by Dante in his "Divine Comedy" as the greatest philosopher of his time, possibly because in 1252 he lectured publicly in Paris and made a widely favorable impression, returning there in 1269 to lecture on theology. His complete works consisted of seventeen volumes. Two were entirely scientific speculations in the realm of physics and chemistry; and twelve were on philosophy, intermingled with medicine. The remaining three were on theology. In addition to these there were innumerable translations with his comments, including a "Commentary on Aristotle," several short treatises on "Heaven and Earth," "A Method for Uplifting the Soul" (perhaps one of the first self-helps), with suggestions for self-hypnotism, or psychotherapeusis.

He died in 1274 at the age of 47 or 49. (The records are not exact as to the date of his birth.) There is a Dominican cloister in Naples used as a municipal school by the city authorities, adjoining which is a chapel containing a tomb and a crypt dedicated to him. According to legend, Christ appeared to him and thanked him when he wrote his "Summa Theologiae" (Summary of Theology) in the words *Bene scripsisti de Me, Tomasso,*" "You wrote well of me, Thomas."

The interest of Thomas Aquinas to medicine centers in his laborious translation and preparation in manuscript form of the old medical masters, thereby forming the first link in their transmission afterward, on the invention of the printing press, into works which still later were to be passed on into foreign and modern tongues.

450 Sutter Street.

CLINICAL NOTES AND CASE REPORTS

FACTITIAL PROCTITIS

WITH ULCERATION WRONGLY DIAGNOSED AND TREATED AS A PRIMARY RECTAL CARCINOMA

By GEORGE E. MALMGREN, M. D.
Los Angeles

IN 1929 sixty-five cases of factitial proctitis, observed at The Mayo Clinic between 1921 and 1929, were described by Dr. L. A. Buie and myself.[1] We defined the term as "used to designate pathological phenomena, sometimes found in the walls of the rectum following the extrarectal application of radium or a combination of radium and x-ray in the treatment of lesions involving pelvic structures other than the rectum."

SIGNS AND SYMPTOMS

Factitial proctitis is characterized by the same type of changes which may be found on any mucosal or skin surface following irradiation therapy. Proctoscopic examination reveals typical appear-

ances in all of its various stages. In its earliest and mildest form, telangiectasia only is seen, and newly formed blood vessels with resultant hyperemia and bleeding appear. This may go on to actual ulcer formation. These ulcers vary in size from one to four centimeters in diameter, and may be deep and crater-like. They are usually covered with considerable necrotic material. If this is wiped off, a tenacious, tough, yellow or silver-gray membrane is found to cover the base. Areas of telangiectasis usually surround the ulcer. A rectovaginal fistula occasionally develops from complete destruction of the wall between the rectum and the vagina.

The onset of these changes varies from a period of two or three weeks to several years following the last application of radium and x-ray. Subjectively these patients complain of atypical sharp, dull or bearing-down rectal pain, hemorrhages of bright red or clotted blood from the rectum, and tenesmus, with increasing desire to go to the toilet.

We feel that these phenomena are not common, are usually mild, and certainly cannot be regarded as an objection to the treatment of carcinoma of the uterus or ovary, or uterine fibroids with radium.

The prognosis of these rectal lesions depends entirely upon the fate of the original extrarectal lesion for which the radium treatment was given. In the great majority of cases (73.8 per cent) this has proved to be carcinoma of the uterine cervix.[1] We have found that if the carcinoma is controlled and proper palliative treatment instituted, the factitial changes and ulcers will usually heal and disappear. This treatment must occasionally be continued over a long period, and sometimes even years elapse before the bleeding disappears.

I wish to report the following case as an example of one of the severest forms of the disorder, where a diagnosis was not made and where this benign entity was treated as a primary rectal malignancy.

REPORT OF CASE

Mrs. C. A. in 1930 complained of bloody vaginal discharges and weight loss of one and one-half years' duration. A diagnosis of carcinoma of the cervix of the uterus was made. Two courses of vaginal radium applications were given along with a series of x-ray treatments. Mild symptoms of rectal irritation followed this treatment but disappeared after a few weeks. She has had no uterine symptoms since the last radium application (July, 1930). Repeated pelvic examinations have failed to disclose any evidence of recurrence. In May of 1931 the patient began to pass small amounts of bright red blood with her stools. She went to a physician who told her that she had "piles," and prescribed a box of suppositories. The bleeding continued and increased in severity. She then was given a course of injection treatments for hemorrhoids, without benefit. In August of 1931 she began to complain of a constant dull pain located about six inches above the anal orifice. At the time of bowel movements this became aggravated and changed into a sharp, colicky, knife-like pain. She began to have constant bearing-down sensations and went to the toilet six to eight times a day. She seemed unable to empty her rectum and usually passed only small quantities of bloody mucus. A proctoscopic examination was done in September, 1931, and a diagnosis of primary carcinoma of the rectum was made. Immediate surgery was deemed necessary because of the extreme amount of discomfort. On September 15, 1931, a colostomy was made. She immediately improved and was sent home to gain strength for a posterior resection of the growth.

The patient was examined by me on November 10, 1931, for the purpose of determining whether the growth was primary in the rectum or an extension from the uterus. A number of indurated ridges around the anal canal were present from the recent injection treatment. A large, indurated, fixed, infiltrating, ulcerated mass was felt on the anterior wall of the rectum, about eight centimeters above the anus. The proctoscope revealed the ulcer to be about four centimeters in diameter. The edges were piled up and it was covered with slimy necrotic material. When the base was swabbed, the characteristic silver gray, tenacious membrane was found to cover the ulcer. Numerous telangiectatic areas, which bled on the slightest trauma, surrounded the ulcer. A diagnosis of factitial proctitis with ulceration was made and palliative treatment instituted. She continued to improve and the colostomy was closed January 15, 1932. A proctoscopic examination on October 3, 1932, revealed the ulcer completely healed. Telangiectasis, however, was still present, and the patient passes a small amount of blood with most of her bowel movements.

COMMENT

This case is an example of the extreme untoward effects of improper diagnosis. Suppositories and injection treatments were used, and served only to cloak the real nature of the disorder. A false diagnosis of rectal carcinoma led to an unnecessary colostomy which had to be closed at a later date.

1930 Wilshire Boulevard.

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PURULENT MENINGITIS

By ELMER M. BINGHAM, M. D.
Riverside

AS an introduction to a review of recent advances in the therapy of purulent meningitis, we wish to present three uncommon cases of meningitis. These patients were admitted to the Riverside County Hospital during the past five months.

REPORT OF CASES

CASE 1.—E. H., a Mexican girl of four years, was admitted on July 16, 1932, and a diagnosis of tubercular meningitis made. Lumbar puncture on admission revealed a normal pressure and cell count. The following day, spinal fluid pressure was 30 millimeters of mercury without increase in cells. Chest x-ray was diagnosed as bronchopneumonia, and lumbar punctures were discontinued until July 20, when convulsions again occurred. Spinal fluid was then turbid and antimeningococcic serum was given before the laboratory reported both Gram-negative and Gram-positive diplococci. Lumbar taps were continued, but bacteria became more numerous and cells increased to 5,500. The tryptophan test was positive. No tubercle bacilli were found in direct smears. The organisms were identified as *Meningococcus crassus*. The patient died July 24, and permission for autopsy was not obtained. Guinea-pig inoculated with fluid showed tubercles in the liver, spleen, and one kidney.

TABLE 1.—*Case No. 3. Summary.*

Day	Hour	Pressure	Cells	Bact.	Amt. Rem.	Surgery
1	10 p. m.	32 mm.	1200	0 (?)*	10 c.c.	.....
2	8 a. m.	16	760	Rare	20 c.c.	Mastoidectomy
	1 p. m.	14	1282	Few	30 c.c.	Carotid exposed; 10 c.c. acriflavine
	10 p. m.	32	.....	.....	30 c.c.	.....
3	8 a. m.	14	345	Num.	21 c.c.	10 c.c. acriflavine, left carotid
	3 p. m.	26	417	.....	5 c.c.	(Block ?)—Cisternal—bloody
	11 p. m.	14	.....	.....	10 c.c.	.....
4	8 a. m.	22	170	Many	23 c.c.	10 c.c. acriflavine
	3 p. m.	13	550	.....	25 c.c.	.....
	10 p. m.	48	1575	.....	50 c.c.	.....

* Technician not available.

Meningococcus crassus is reported [1] as nonpathogenic, a secondary invader in meningitis caused by other organisms. It is readily identified by cultural methods.

* * *

CASE 2.—G. M., a white man of forty-seven years, was admitted on November 6 with a history of headaches, dizziness, delirium, and coma, which developed during the two days previous to admission. When I first saw him the following day, the patient was in deep coma. Lumbar puncture was done and fluid was found under increased pressure and turbid. Pneumococci were present in enormous numbers. Blood count showed only 5,700 leukocytes with a temperature ranging to 105 degrees. Six hours later 37 cubic centimeters of spinal fluid were removed showing a 50 per cent reduction in cells. At 8 p. m. cisternal and lumbar taps were done simultaneously and normal saline introduced by gravity pressure through the cisternal needle until clear flow was established from the lumbar needle. Condition failed to improve and the patient expired the following morning. At autopsy the entire brain surface was found covered by a thick, greenish exudate.

Obviously, subarachnoid drainage or instillations will have little effect upon such extensive infections which are seen late. While irrigations of the spinal canal will sometimes prevent a low spinal block in stages where the fluid is too thick to flow, it was employed in this case to reduce the number of bacteria present. Kolmer [2] advises against the injection of chemical antiseptics into the subarachnoid space.

* * *

CASE 3.—H. H., a white boy of eight years, was admitted on the night of November 12, 1932, with evidence of a left otitis media and meningitis. Meningeal symptoms apparently developed on November 7. On admission, temperature was 104.4 degrees, with white blood cells 31,600. Lumbar puncture revealed a turbid fluid with a pressure of 32 millimeters of mercury. Because of the history suggestive of otitic origin, no antimeningococcic serum was given. The following morning, left mastoidectomy* was done under ether anesthesia. Lumbar puncture at noon revealed further increase in cells and bacteria. Direct smears from the mastoid cells were negative for bacteria and subsequent cultures were sterile. In view of the sterile mastoid and the positive identification of streptococci in the spinal fluid, the patient was again anesthetized and the left common carotid exposed* by an incision

* Operations by Drs. E. P. Miller and W. K. Templeton.

TABLE 2.—*Summary from Literature, Showing Results of Intracarotid Therapy.*

Series	Staph.	Strept.	Pneumo.	Mening.	Preg'l Iodin	Acriflavine	Serum	Right Carotid	Both Carotids	Recovery	Death
Crawford (10)	3	..	..	..	3	..	..	1	2	2	1
	..	3	..	..	3	..	..	1	2	1	2
	..	..	..	3	3	..	3	..	3	2	1
Dowman	1	..	..	..	1	..	..	1	..	1	..
	..	3	..	..	3	..	..	3	..	1	2
Davis	1*	1*	..	..	1	..	..	..	1	..	1
	..	1	..	..	1	..	..	..	1	..	1
Spurling	1	..	..	..	1	..	..	..	1	..	1
	..	1	..	..	1	..	..	..	1	..	1
Lindemuller	..	1	..	..	1	..	..	1	..	..	1
	..	..	..	1	1	..	..	1	..	..	1
Ersner and Mendell (6)	..	2	..	..	2	2	..	..	2	2	..
Kolmer (2)	..	7	..	..	(5)	(5)	2	..	7	..	7
	..	..	3	..	..	..	(3)	..	(3)	..	3
	..	..	..	1	..	..	1	..	1	1	..
McMahon	..	..	1	..	..	..	1	..	1	1	..
Kauffman	..	1	..	..	1	1	..	..	1	..	1
Total	6	20	4	5	27	8	10	8	26	11	23
Recovery	3	4	1	3	9	2	4	3	8	..	..
Death	3	16	3	2	18	6	6	5	18	..	..

* Mixed infection.

parallel to the anterior border of the left sternomastoid muscle. The wound was left open and a guide ligature placed around the carotid. Ten cubic centimeters of 0.5 per cent neutral acriflavine were injected. This was repeated on November 14 and 15, with spinal fluid findings as shown in the chart. Culture of the fluid showed hemolytic streptococci. Blood culture taken on November 15 remained sterile. At no time was there evidence of acriflavine in the spinal fluid, although a distinct coloration could be seen on the left side of the face. At the end of the third hospital day the child showed a marked change, spinal fluid pressure rising, coma deepening, and breathing irregular. Patient expired the following morning. At autopsy the coloration of the left side of the face was marked, but there was no tinge to the brain or meninges. The brain was wet and edematous, with no organized fibrin or exudate. Summary of condition at different hours is given in Table 1.

This was our first attempt at intracarotid therapy, and we feel justified in interpreting the results as encouraging although the outcome was a fatal termination. We are unable to explain the absence of the dye in the spinal fluid; the urine remained heavily colored. We were unable to obtain Pregl's solution of iodin at this time and resorted to acriflavine. In the absence of continuous spinal drainage, as advocated by Retan,[3] or by surgical means, we believe this case demonstrates the necessity of dehydration by limiting fluids and hypertonic solutions intravenously to accomplish two purposes: (*a*) concentration of serum or antiseptics in the spinal fluid; (*b*) control of cerebral edema and intracranial pressure.

INTRACAROTID THERAPY

The intracarotid treatment of purulent meningitis was first advocated by Kolmer [4] after considerable experimental work on artificially produced pneumococcic meningitis in dogs. By exposing the carotids and injecting anti-pneumococcic serum into both arteries daily for at least three days, he was able to show recoveries in 60 per cent of the animals. Intravenous chemotherapy produced no results in his work. He recommended the procedure for a clinical trial in human cases, admitting it to be a major procedure, theoretically sound and experimentally successful, justifiable in a condition where the mortality approaches 100 per cent.

The technique was first applied, to our knowledge, for the introduction of arsenical preparations in cases of paresis.[5] Since Kolmer's original work, thirty-four cases of purulent meningitis have been reported as treated by this method, with a recovery of 32.3 per cent. It is advisable to use a small tuberculin needle to avoid bleeding from the carotids. Drainage by the lumbar or cisternal route should follow the injection shortly. We do not agree with Ersner and Mendell [6] that partial thrombosis which occurred in one of their patients favored the course of the disease by putting the part at rest. Unimpaired circulation is paramount in an infected field.

The literature on other types of therapy which have effected cures is amply covered by Rosenberg and Nottley [7] and Applebaum.[8] The results indicate that intracarotid therapy offers another tenable method, especially if we accept former statistics by Yerger [9] where the mortality was 97 per cent. Most of the favorable results have been obtained by the use of Pregl's iodin. Kolmer [4] recommends the use of serum or acriflavine and the exposure of both carotids, regardless of the location of the focus of infection.

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MERCURIAL DERMATITIS

FOLLOWING LOCAL APPLICATION OF CREAM FOR REMOVAL OF FRECKLES

By W. L. Marxer, M. D.
Los Angeles

THE scarcity of literature relating to cases of mercurial poisoning, together with its rarity of occurrence in clinical practice in spite of the many thousands of instances in which topical mercury is used, gives us an idea as to its infrequent incidence. In a review of the literature of the past twenty years, I have found fewer than an equal number of cases. Each case, however, has been distinctly different, yet all tend to emphasize two features of hydrargyrism, namely, its varied skin manifestations, and the uncertainty of its degree of involvement and extension.

The most common skin lesion appearing is the papule in the vicinity of the hair follicle, spoken of as folliculitis; but more severe consequences may follow its use, as in the case in which gingivitis, with loss of a tooth permanently, from topical application of mercury for psoriasis, results.[1] There have been no cases reported, however, in which following topical mercury application, the patient suffered dangerous kidney complications. The skin manifestations and types of skin lesions are very numerous, and nearly every type of skin lesion has been described in which mercury has been the responsible aggressor.

REPORT OF CASE

The case to be reported is that of a young woman, age 26, weight 120 pounds, height 5 feet 5 inches, who

1 Beckett, P. E., Dermat. and Syph., (June), 1925.

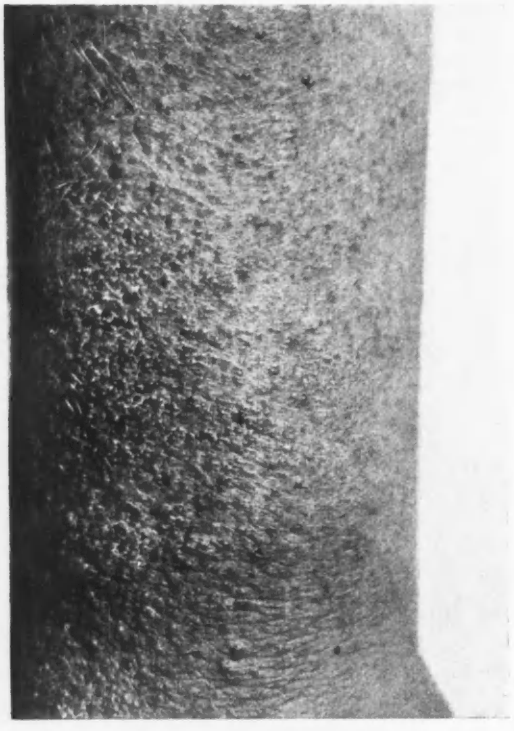

Fig. 1.—Showing eruption as it appeared on the dorsum of the forearm.

was so ill that she called the doctor to see her at her home because of great discomfort. She stated that on the preceding night she had applied to the dorsum of her arms and to her cheeks some freckle cream. The quantity used was not over one gram. Stated that she had a very uncomfortable and restless night, and that when she awakened in the morning she noted that her eyes, face, neck, and arms were swollen and itchy. She washed her skin carefully with soap and water, and applied zinc oxid ointment as per directions in literature accompanying the jar of cream, but enjoyed no relief; on the contrary she found that she was considerably less comfortable than she was before its application.

I saw the patient at about 10 a. m., at which time there was a papular eruption on the dorsum of both arms and on the face. There was also, but in a less marked degree, a similar eruption of the thorax, front and back, and the front of the abdomen. There were present also a few similar lesions on the medial sides of both thighs. The lesions occurred symmetrically, and wherever the lesions occurred there was pruritus and burning. There was a marked edema of the eyelids and face, as well as the neck; wherever the lesions were could also be found edema. Temperature 99.6 degrees and pulse 82. Temperature returned to normal in three days. Blood and urine examination revealed no pathology.

Calamin lotion with one per cent nupercain was used locally, and prescribed ephedrin sulphate, grain three-quarters, and sodium bromid, grains 3, were used in capsule form.

Patient's subjective symptoms began to disappear immediately, and within seven days left her without any annoying skin symptoms; but it was not until three weeks later that she was entirely free from symptoms, because each time she would perspire the sites of application of the ointment would cause her some discomfort with burning and itching. The chief type of lesions developed was that of a folliculitis, as is evident from the accompanying photograph.

On a previous occasion this patient had a similar experience from the use of 1-5000 bichlorid of mercury as a wash for an external otitis. Lesions similar to the ones described above developed on the skin wherever the wash came in contact with it, and the same set of subjective symptoms developed locally, as did with the present illness, but confined to the area of involvement.

508 West Santa Barbara Avenue.

ADDISON'S DISEASE

REPORT OF CASE TREATED BY ESCHATIN

By William Fitch Cheney, M. D.
San Francisco

IN past years of practice only six patients can be recalled that were under personal observation and diagnosed as having Addison's disease. All of these patients died within a year, and some of them within a few weeks after the diagnosis was made, irrespective of the plan of treatment employed. Recently, however, another patient has been under observation who is not only alive nearly two years since first seen, but has been relieved of all the original manifestations. Such a deviation from previous experience seems to justify report and explanation.

REPORT OF CASE

Mrs. B., age twenty-seven, first came for advice on September 28, 1931. She had left her home in the interior of this state in January, 1931, for a trip abroad. She was well, apparently, until she reached Cairo, Egypt, the following May. Then she was taken ill with persistent nausea and vomiting, whether she ate or not, accompanied by prostration and weakness, lasting for ten days; but without pain in her abdomen or elsewhere. She noted at this time that her color seemed darker than before. There followed an interval of two or three weeks when she felt fairly well again, though her skin continued to be abnormally dark. Deciding to return home, she reached Jugo Slavia, when another attack occurred, again characterized by nausea, vomiting, and prostration; and this time several weeks passed before she felt well enough to proceed upon her journey. She managed finally to cross the ocean without any serious recurrence, and remained fairly well until she reached the United States. Then, in the latter part of August and during September, her attacks reappeared, for several days at a time. She had never felt perfectly well since the onset of her illness in May, but always was "terribly weak"; and though better and worse at intervals, her illness had never entirely disappeared. She complained that she constantly felt exhausted, and worn out by any exertion. She had no appetite, was always more or less nauseated, especially on rising in the morning, and had lost considerable weight. She observed also that her color had gradually grown much darker since leaving Egypt, the pigmentation increasing steadily, mostly on exposed surfaces of the body, but also in other parts. There had been no disturbance of her menstrual periods at any time, nor of her bowels.

On physical examination the patient was still fairly well nourished, weighing 138 pounds. The striking feature about her appearance was her color. This was due to a brownish-black pigmentation of face, neck, hands and forearms, so extreme that she resembled a negress. Her lips particularly were black, and the palms of her hands showed brown lines in every crease. There was similar brown-black pigmentation irregularly distributed on the dorsum of the tongue, the inner surface of the cheeks, the gums, the soft palate, and the pharynx. When the clothing was removed the pigmentation was seen to involve also the

trunk, the limbs, and the external genitalia. Particularly dark were the mammary nipples and areola, the vaccination scars on arms, all spots where insect bites had been acquired in Europe, and the waistline where skirt-bands had pressed.

Next in significance to the color was the evidence of serious disturbances in the circulation. The heart rate was 92 at rest. Its rhythm was regular and its sounds were clear, but weak and lacking force. The blood pressure was so low that at times it was difficult to detect it; and the systolic reading was never above 70 to 80. No evidence of disease was found in the lungs. The liver and spleen were not enlarged. The abdominal and pelvic organs presented no abnormality. Blood examination showed only a slight secondary anemia and a negative Wassermann. The urine was normal in every respect.

COMMENT

It is not in order at this time to discuss the details of differential diagnosis; but the combination of violent gastric disturbances in recurring attacks, the extreme general pigmentation of the body and the circulatory asthenia shown by a weak, rapid heart and an excessively low blood pressure, made up a picture that could hardly be mistaken. Once the conclusion was reached that the case was one of Addison's disease, the first thought was of the Swingle-Pfiffner suprarenal cortex extract, from which such remarkable results had recently been reported at the Mayo Clinic. A telegram to Doctor Rowntree, offering to send the patient to him for treatment, brought the prompt response that a satisfactory product of the extract was not available at the time. Subsequent correspondence brought out the fact that further preparation of the Swingle-Pfiffner extract had been assumed by Parke, Davis & Company. This firm answered my inquiries, however, with the statement that none of this substance would be ready for use before the first week in November.

Thus there appeared to be no immediate prospect at the time of any plan of treatment different from that previously employed in such cases. The patient was placed in bed at Stanford Hospital. Powdered suprarenal cortex (Parke, Davis and Company) was ordered by mouth three times a day; one five-grain capsule, which soon had to be reduced in amount. Parke-Davis solution of adrenalin, 1 to 1000, was given twice a day hypodermatically, but not more than five minims at a dose could be tolerated. Twice a day, also, one ampoule of a solution of adrenocortin, made by a California firm, was given intragluteally, one cubic centimeter of which was said to represent five grams of adrenal cortex. But all these measures failed to relieve the weakness, prostration, anorexia, nausea and vomiting, or to raise the blood pressure. As described by Rowntree and Snell in their monograph on Addison's disease, doses of suprarenal cortex, given by mouth, were found to cause increased nausea unless they were kept small; and adrenalin injections likewise, except in inadequate dosage, caused the patient such pronounced tremor that she begged to have the remedy discontinued. As regards the ampoules of adrenocortin, their failure to benefit was undoubtedly due to the weakness of the preparation; for one cubic centimeter represented, at most, only five grams of adrenal cortex, while in the extract known as eschatin, ultimately put out by Parke, Davis & Company, one cubic centimeter represents 30 grams.

Thus, during the month of October, 1931, no improvement in the patient's condition could be noted. On the contrary, she grew weaker and weaker, unable to eat, unable to keep what little food she did eat, unable to get out of bed or even to sit up in bed without faintness. It seemed that there was little or no hope, and that the end was near. Finally, after repeated correspondence with Doctor Lescohier, of Parke, Davis & Company, which must have tried his patience, in despair a telegram was sent on November 7 advising that my patient was so low the new extract must be sent at once if any good was to be accomplished. That same afternoon their answer came by wire: "Two ten cubic centimeter vials eschatin air mail today"; and at midnight the next day the package was delivered here. Never in many years of practice has any experience given an equal sense of elation.

Next morning, the first dose of eschatin was administered. Parke, Davis & Company had warned that the supply was very limited, so that only one cubic centimeter was injected for this first dose. Each day subsequently this was repeated, while all other medication was discontinued. Within a week definite improvement was noted. Appetite returned and a feeling of well-being. Nausea and vomiting ceased. Strength returned gradually, so that in ten days the patient was able to be up and about her room. On December 12 she was well enough to be allowed to leave the hospital and return to her home. Never since then has her trouble recurred. On the contrary, she has not only remained free from any serious symptoms, but has been able to attend constantly to her household duties and to go about as she pleases, in her home or on the street, without any sense of fatigue greater than she ever experienced before her illness. The blood pressure little by little increased until now, for several months past, it has averaged 110 systolic. The pigmentation has gradually disappeared to such a degree that no one now would be attracted by any peculiarity in the patient's appearance; but the color has never become entirely normal, though it continues gradually to improve.

During the early part of 1932 the daily dose of eschatin was increased to 1.5 cubic centimeters, and during the latter half of the year to 2 cubic centimeters. This increase was not prompted by any serious relapse, but simply by the patient's complaint that she did not feel as energetic as before. The dose can be still further enlarged as desired, as time goes on, if developments require it. When last seen, on June 16, 1933, this patient apparently was in good health, with no complaint to make of any kind. She still takes 2 cubic centimeters of eschatin by injection every day, which she has learned to administer to herself as diabetic patients do with insulin.

* * *

My thanks are due to Doctor Rowntree for helpful advice at the outset; and to Parke, Davis & Company for allowing their extract to be used in this case, even before it was ready for general distribution. It will undoubtedly be a satisfaction to them to know that by this action they aided in saving a life.

210 Post Street.

Even in the populous districts, the practice of medicine is a lonely road which winds uphill all the way, and a man may easily go astray and never reach the delectable mountains unless he early finds those shepherd guides of whom Bunyan tells—Knowledge, Experience, Watchful, and Sincere (Osler).—*Weekly Bulletin, California Department of Public Health.*

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions of subjects for discussions invited.

BURNS

W. C. Adams, M. D. (1904 Franklin Street, Oakland).—*Symptoms.* These vary, as a rule, in accordance with the severity of the burn and the nervous make-up of the injured individual. The symptoms are practically the same in all types of burns, whether they be chemical or thermal, moist or dry, x-ray or electrical, and for general purposes can be described as local and constitutional in their action on the human body. Again, they may be classified as objective and subjective. For simplicity's sake, these several classifications will be abandoned and the various symptoms described more or less together.

The most outstanding and common symptom is pain, and its severity depends upon the extent and depth of the burn. Pain, being subjective in nature, is naturally somewhat dependent upon the individual, some persons crying out and becoming hysterical over comparatively small and minor burns, while others, with much more extensive and deeper ones, make but little fuss. Nevertheless, pain is almost always present to a greater or less degree.

In burns of the first degree the skin or mucous membrane becomes reddened, varying from the slightest pink, disappearing quickly after removal of the cause, to an intense red which may remain for two or three days, and then gradually subsiding to a tan. This latter is most often seen in sunburn and overexposure to x-ray or other forms of electrotherapy. The pain in this type of burn is manifested by a sensation of warmth, in the milder cases, to very marked smarting and soreness in the more severe ones. When first degree burns are severe and extend over a large portion of the body, as in sunburn, quite excruciating pain and discomfort with shock may ensue. I have seen cases of this type so severe that hospital attention and opiates were necessary for several days. However, the pain and redness usually disappear in two or three days, with or without treatment. The temperature seldom rises above the normal in these cases.

Second degree burns present an entirely different picture. In this type we may have simple vesiculation, with moderate pain and little destruction of the superficial layers of the skin or mucous membranes; or again we may have all of the sad and serious sequelae of burns, such as death occurring in a few hours, a tremendous amount of suppuration, toxemia, emboli, excruciating pain and slow healing extending over a period of weeks. Even without destruction of the deepest layers of the skin, it is possible to have much damage done to the subcutaneous tissues and underlying structures which, delaying the healing process, quite often causes limitation of motion of the joints and other complications. This is frequently noted in burns of the hands, many weeks being required to regain the normal strength and function of the fingers. The vesicles often do not appear for one to two days after the exposure, and then may go on to extensive bullae with consequent rupturing, weeping large quantities of serous fluid and exposing a very reddened surface, over which is most often spread a fibrinogelatinous membrane. It is under this gelatinous coat that the healing process takes place. It is often the case in these large ruptured bullae that extensive suppuration develops with the resultant absorption and toxemia. Shock commonly occurs in second degree burns, especially where about one-fourth of the body surface is involved, and may appear immediately after the occurrence of the burn, resulting in death at once, or may last from a few hours to days; and then the patient becomes improved or passes into toxemia and dies, toxemia being the usual cause of death when it occurs several days after the accident.

In burns of the third degree we may have destruction of all the layers of the skin only, or this destruction may extend varyingly to the subcutaneous tissues, muscles, blood vessels, bones or the underlying organs. The overlying skin may remain intact but be charred or give a blanched, leathery appearance, followed later by sloughing and the appearance of granulation tissue. These types may be small or extend over large areas, and are most frequently the result of exposure to dry burns, such as direct electric current, jumping of current from x-ray machines and flames. Of course, scalding and exposure to chemicals will produce the same degree, but usually requires much longer exposure. It is from these third degree burns that immediate death from shock occurs most frequently. Again, very extensive burns of this type will produce surprisingly little shock. Large sloughs usually take place in about two weeks, but may be much longer in forming, depending upon the depth of the burn. After several weeks of treatment the patient appears to be improving satisfactorily, the granulations appear clean and healthy, when, as out of a clear sky, restlessness suddenly develops, the temperature rises, the pulse becomes rapid, and the patient goes into unconsciousness and rapidly dies. Such a death is usually due to a sudden toxemia. Death occurring suddenly after ten days, takes place more often in children, and in women more often than in men.

In extensive burns of second and third degree, there is most often asthenia, hypotension and sub-

normal temperature, which is almost always followed by a definite and often quite marked rise in temperature above the normal. When the sloughing has been completed and the fresh granulations begin to arise, the temperature usually drops and the patient shows marked general improvement.

In my experience, the degree of recent burns cannot be determined, as a rule, on the first examination, two or three days of observation often being required.

After the swallowing of boiling or corrosive substances, swelling and edema of the throat usually occurs, making deglutition and breathing exceedingly difficult or impossible without mechanical or surgical interference.

Burns arising from sparks or contact with high tension electric wires are generally small, very deep and of the third degree type. They are found at the point of entrance and exit of the current from the body. The burns at point of entrance are frequently so small that considerable search is necessary to find them, while those at point of exit are usually larger, depending on the area of the contacting skin. Sloughs from these burns may be very deep and result in extensive secondary hemorrhage.

Deeper burns of radium and x-ray irradiation are very much alike and cannot, as a rule, be differentiated except from the history. Symptoms of these burns are frequently delayed even for years after exposure due to a slowly progressive, obliterative endarteritis which creates nutritional disturbances and goes on to a fatal ischemia. These deeper burns are usually limited to the area of exposure, and the skin is ordinarily firmly adherent to the underlying tissues. The skin being involved to various thicknesses, shows deep ulceration in patches extending even to the deeper tissues and underlying organs. Many of these ulcers heal and recur again and again. The areas not broken down show no hair and are atrophied often with patches of telangiectasis or of brownish pigment. These ulcers commonly give the appearance of cancer, their edges being thickened, indurated and exerted, and of a grayish red color. The depth of these burns is difficult to determine, exploration being necessary in most cases. Severe deep-seated pain with much sensitiveness is present in all of these burns, irrespective of their size. This is due, no doubt, to irritation of the nerves from suppuration, pressure of scar tissue on them, or possibly injury to the nerves themselves from the irradiation.

* * *

John H. Breyer, M. D. (65 N. Madison Avenue, Pasadena).—*Treatment.* The acute burn is always a surgical emergency. The extent of the scalded or burned surface is a more important factor than the degree. A burn involving one-sixth to one-third of the body surface may prove fatal. Unless definitely limited and of first and second degree type, it is no longer treated by appropriate local treatment, but must be considered as an injury which produces serious systemic changes.

The mortality from burns has been greatly reduced in the last five years following the use of tannic acid and gentian violet dye sprays. The object of treatment should be to relieve pain and to prevent primary shock, toxemia, dehydration, sepsis and complications. The use of ointments is contraindicated in extensive acute burns, because they must be removed before tannic acid solution or gentian violet solution treatment can be instituted. This is time consuming, painful and adds to shock. The tannic acid solution must be made up fresh; twenty-five grain powders of tannic acid can be carried in our emergency bags. One powder added to one ounce of water makes a quickly available five per cent solution. It can be applied by a soft brush. An atomizer may break or get out of order. Gauze compresses soaked in the solution can quickly be applied, covered with waxed paper, and further dressings and wrappings applied to preserve the body heat. The tannic acid solution relieves the pain, but we should not hesitate to give morphia or codein if indicated.

The next step is to plan for the patient's subsequent care. Severe burns can best be treated in a hospital. The room temperature is brought up to body temperature. The patient is put to bed, undressed and placed on sterile sheets and towels. A burn is a wound that should be treated by aseptic precautions as other wounds. A cradle of lights is placed over the bed and covered with a sterile sheet to prevent air currents. The temperature under the cradle is maintained at 85 to 100 degrees Fahrenheit. If gauze has been applied previously it can be removed more painlessly with the aid of tannic acid spray. If an ointment already has been used, a solvent, as ether, is necessary to remove all grease. Morphia or even an anesthetic may be necessary, as this procedure is very painful, though very essential. Blisters should be opened and any dead skin cut away. One should guard against producing any free bleeding. Five per cent tannic acid solution spray is applied every fifteen to thirty minutes until a firm mahogany brown membrane or crust is formed. New blebs are cut away and areas sprayed. Oozing areas are resprayed. Tanning is usually complete in twelve to twenty-four hours. The purpose of this local treatment is to coagulate the burned proteins and prevent the absorption of toxic products. The tanned crusts provide an impervious dressing against chemical, bacterial and mechanical irritation, under which granulation and epithelization can proceed.

From the very beginning of treatment fluids, preferably hot, by mouth is urged. Underhill found that a burn involving one-third of the body surface may result in a fluid loss of 6,000 to 7,000 cubic centimeters a day. The maximum fluid loss is in the first twelve to thirty-six hours. Watch for drop in blood pressure. The concentration of the blood thus produced is estimated by hemoglobin calculations (Newcomer). A reading of 125 is considered dangerous. The blood chlorids

also should be checked. Salt solution given intravenously and by Murphy drip is indicated. At least 3,000 to 4,000 cubic centimeters fluids should be given daily. The loss of fluids begins early. It is best to restore the fluid loss in the early period, as it is much easier to prevent concentration than it is to restore concentrated blood to normal. Blood transfusions are life saving when given early in the treatment of severe burns, as well as later when secondary anemia becomes marked. Five per cent glucose may be added to the normal salt solution. Antitetanic serum is indicated in the majority of cases. The development of edema in area of burns must be watched during the first few days. If the crusts produce constricting bands they must be cut.

In five to seven days fluid or pus may collect under the leathery crusts. In seven to fourteen days, the crusts of the deep burns will begin to loosen. Watch the temperature curve and look for pockets. If infection develops under crusts, the pockets must be uncovered or slit, and either vaselin gauze, Dakin's solution or some wet dressing applied. If no infection takes place, the crusts are allowed to remain until they loosen. The less infection that takes place, the less scar tissue will be formed. The denuded area, if large, should be skin grafted as early as possible.

After the crusts have come off and with more or less infection present, it is a problem to get the field ready for skin grafting. My results have been greatly improved since reading the paper entitled "A simple technique for promoting epithelization and protecting skin grafts," by Adalbert G. Bettman, M. D., published in the *Journal of the American Medical Association* December 19, 1931. The formula recommended is called oxyquinolin sulphate scarlet R ointment. It is antiseptic, nonirritating, does not injure healing tissue, and it hastens epithelization. The ointment is used to impregnate wide mesh bandage gauze. It has all the advantages of vaselin gauze and none of the disadvantages. *Recipe:*

	Gm. or Cc.		
Oxyquinolin		6	Gr. x
Chlorbutanol (choretone)	2	4	Gr. xl
Liquid petrolatum	4	0	Dr. i
Scarlet R ointment, 5 per cent	120		Dr. iv

"When 10 per cent scarlet R ointment is used, take two ounces and petrolatum two ounces. The oxyquinolin sulphate and the chlorbutanol are ground separately into fine powders, and then mixed separately with portions of the liquid petrolatum. All the ingredients are then made into a red ointment. The finished ointment is heated until fluid, and rolled gauze bandages, 32 by 44 mesh, or coarser, are immersed in the hot ointment until the entire bandage is thoroughly impregnated, and until all bubbling has ceased. When cool, it is ready for use. The above formula will impregnate completely three ten-yard gauze bandages, two inches wide, or six one inch wide, provided it is heated in a small vessel, as an aluminum measuring cup, such as is ordinarily used in a kitchen. When a bandage has been immersed as described, the outer layers are completely covered, so these are discarded. The warp and woof of the rolled gauze are completely impregnated with the ointment, but the interstices are open."

My difficulty has been in finding rolled bandage of wide enough mesh so that the interstices are open and not filled with ointment. This is necessary to permit easy escape of the serum or pus. The oxyquinolin sulphate scarlet R gauze is applied in single layers covering the entire field. It is then reinforced by layers of dry gauze to quickly carry away the secretions and to protect the wound. The inner dressing is not changed for from two to five days. When it is changed, care must be used not to disturb the epithelium. The outer dressing is changed more often as pooling of secretions must be prevented. This treatment in my cases has definitely shortened the waiting period of preparing the surface for skin grafting. The oxyquinolin sulphate scarlet R gauze makes an excellent protection for skin grafts. They seem to take better with its use. I suggest reading the original article to get more accurately the details.

It is while waiting for infection to subside that the patients, especially if they are children, become anemic and exhausted. Everything possible must be done to maintain their nutrition. It is during this stage that deformities must be guarded against. By applying the above principles in our treatment we will save more lives. But we will be judged by our end results. Early motion should be maintained as far as possible, and the affected member should be dressed in such a position that when activity is begun, function will not be opposed by taut scar tissue. Early skin grafting is very important in preventing contractures and deformities. Guarding against infection from the very onset of our treatment may help in preventing the heavy connective tissue base before skin grafting can be attempted. Pinch grafts may be pushed beneath the granulations and Thiersch grafts may be threaded on a large eye needle and woven in and out among the granulations. Buried grafts grow beneath the granulations. Buried grafts should not be used on exposed surfaces, as the cosmetic result is not good; but they aid in preventing contractures.

It is claimed that when a two per cent gentian violet solution is used instead of tannic acid solution, the crusts are more pliable, and that gentian violet is more antiseptic. It apparently has no harmful effects on tissue cells. The solution likewise must be made up fresh before using. I have had no personal experience with gentian violet dye spray. The literature reports excellent results.

In the extensive severe burn, no one line of treatment can exclusively be carried out. All the ingenuity of the attending surgeon will be called into play. To guard against the hazards of the late period requires careful nursing, constant attention to posture to prevent contractures, and aseptic treatment of the wound to avoid secondary infection. The literature contains many suggestions as to how best to meet the late problems.

STERLING BUNNELL, M. D. (516 Sutter Street, San Francisco).—*Reconstruction After Burns.* Following burns, reconstruction is needed for the following conditions: Flexion contractures, disfigurement from contracting cicatrices, disfiguring keloids, impoverishment of limb from encircling contracting cicatrix, cicatrix with itching skin, a tight drawing feeling, aching, stiff joints and recurrent ulceration in center where the blood supply is least, and loss of tissue.

These sequelae of burns can be greatly reduced by selecting the right method in the original treatment. Infection leads to cicatrization. Early sealing of the tissues by tannic acid, cleanliness, mild antiseptic wet dressings, and the occlusive and surfacing dressings, such as parrasin, are accompanied by much less infection than wounds kept filthy by treating with carron oil, various ointments or powders. By adapting the method to the changing condition of the tissues, infection should be reduced and exuberant granulations kept down. The wound should be closed early by Thiersch skin-grafting. These procedures lessen the degree of the eventual cicatrization. Motion in a flexion crease interferes with healing and should be prevented by splinting. Splinting should be continued also after healing to prevent flexion contracture. The surrounding tissues will then grow longer in response to the traction of the contracting cicatrix across the flexion crease of the joint thus held in extension.

Excessive keloid formation and contractures result especially from tissue that has been partially damaged by heat and yet not to the degree of necrosis. If this tissue spans a flexion crease and so is irritated by motion and intermittent tension, keloid of skin and dense cicatrization and contraction of deep tissue result. Some of these typical deformities with which we are familiar, all in line of direction at right angles to flexion creases, are ectropion, scar from ear to ear encircling mouth (from facial expression and opening of mouth), flexion contractures binding chin to chest, arm or thigh to chest, elbow or knee in flexion, and hand or foot in flexion or dorsiflexion. In the hand, keloid is prone to form around the base of palm, contracting the little finger and thumb, and on the dorsum it thickens and shortens the skin so that the nails are drawn back and one cannot make a fist. Even a second degree burn may result in thick keloid and flexion contracture. About the face, projecting edges such as eyelids, eyebrows, alae nasi, tip of nose and helix of ears are often burned off and in need of replacement.

When reconstructing after burns the cardinal principle is to excise where possible all keloid and cicatrix, and to replace with good tissue. If excised down to normal tissue the tendency to cicatrize and contract is gone. Complete excision liberates adjoining, enclosed or distal tissue, restoring its nutrition. Liberal excising with replacement by grafting new tissue free from tension is far better than utilizing cicatricial sliding flaps and straining tissue to do the impossible, or than resorting to niggardly faint-hearted plastics. Grafting new skin is generally better than the swinging of skin flaps, as our problem usually involves an actual defect from either contracture or loss of tissue.

All lines of tension must be broken, as tension makes keloid. A flap of good skin may be swung across a line of tension, or the line may, by a plastic maneuver, be converted into a zigzag. More liberal relief of tension is accomplished by a Wolfe or a pedicled skin graft.

Thiersch skin grafts are poor, especially when on a cicatricial base, but they are useful as temporary covering or to cover areas from which skin flaps are swung, or to liberate skin under tension. In the latter case a line of tension is cut across and the resultant gap is closed by skin graft. Thus a hide-bound strangled limb may be liberated by longitudinal slits, a fist may be closed after transverse slits on its dorsum, or the tension of a large contracting plaque of scar may be relieved by linear slits in two directions. Thicker or split grafts yield softer skin and contract less than do Thiersch, but Wolfe or whole thickness grafts are still better. The latter require freedom from fat, absolute immobility and postoperative compression, as by rubber sponge. Unfortunately they often become pigmented yellow, brown or black. A bed of good tissue is necessary for a Wolfe graft. This is usually present under flexion contractures from burns because, in contrast to flexion contractures from infection, the damaging agent acted from the outside inwards.

The epithelial inlay method of using Thiersch, split or Wolfe grafts by use of wax stent is excellent to replace mucous membranes in orbit, mouth or nose, or in reconstructing an ear or making eyelids.

Tubular pedicled skin grafts are by far the best for replacing skin. They have subcutaneous fat, result in a skin of normal quality, give better relaxation in the surrounding tissues, do not contract and can be placed over a bed of poorly vascularized tissue. They may be obtained from the base of the neck, abdomen, scapular region, upper arm or thigh, but should always be made in the direction of the creases of the skin so as not to produce deforming keloid. Vertical unsightly scars from pedicles in the neck or abdomen are a discredit to surgery. Pedicles should always be tubular or aseptic, that is, without any raw area present, as in the Italian graft; because raw area means sepsis and results in coarse scars. Hematoma should be guarded against by drainage, and the angles of the pedicle should be so fashioned that they will heal per primam and not prolong the time of reconstruction. Pedicles made on one part of the body can readily be waltzed to another by using the forearm or lower leg as the vehicle, if necessary, and allowing two weeks for each new vascularization.

In reconstructing, all lines of scar should be so planned as never to cross a flexion crease at a right angle, or else a contracting keloid will result. They should zigzag across and lie parallel to the crease wherever possible. A flexion crease is there

to accommodate for the varying positions of that part of the body, so we should not cross it by scar. This applies even to the borders of pedicled skin grafts. Also the line of a scar should not be too long without being broken by a zigzag, because of the later contraction. In opening out flexion contractures all tissues, blood vessels and nerves, and even joint capsules, will have secondarily contracted, and so will necessitate gradual extension of the joint over a period of weeks. Thiersch skin grafting is then often useful as a temporary covering.

After burns there is usually a tissue defect. This is better realized by picturing in imagination what the normal contour should be. Reconstructing a face requires all the artistry of a sculptor and much knowledge of the healing of tissues besides. It should not be entered into too lightly. It is my conviction that modern taxidermy is a higher art than sculpturing, and that reconstructing a live face with a pleasing and normal appearance, allowing for contractures and tissue changes and also for the varying shapes assumed in the play of facial expression, is even more difficult than either.

The Wassermann Policy of the State Department of Public Health.—Recently, at the suggestion of the Chief of the State Bureau of Laboratories, the California Board of Public Health adopted resolutions defining the conditions under which blood specimens for the Wassermann test would be received by the state laboratory. These conditions differed very slightly from those already in force, and were adopted by the board merely to enable the Chief of Laboratories to correct a very few undesirable conditions in limited areas of the state.

Some unauthorized person has seen fit to go to the expense of printing these resolutions on postal cards and mailing them from Berkeley, possibly with the intention of inducing the doctors who received them to believe that they were an official communication from the state laboratory. These cards, carrying only the bare statements without any explanation to show that they referred to Wassermann tests only, have had the effect of causing much confusion and misunderstanding. It is necessary, therefore, to provide an explanation of the exact meaning of the resolutions above referred to, and this will be done by considering the paragraphs one at a time.

1. "No specimens will be received at all from cities or counties having an approved public health laboratory."

This, as well as all the succeeding paragraphs, refers to Wassermann tests only. It means that towns or counties having a public health laboratory are expected to do their own work. This policy has been in force for five years at least. It does not mean that the state will not receive specimens from the local health department which may not be equipped for serology, but that specimens will not be received from private physicians in those communities.

2. "Blood specimens to be examined as a check on treatment will not be received excepting for indigent cases, and from communities not excluded by 1."

This means that we believe our responsibility is limited to the diagnosis of the communicable diseases, and stops short of work done for purposes of treatment after the diagnosis has been made. However, for indigent cases, no distinction will be made.

3. "Blood specimens will be received for purposes of diagnosis only from communities not excluded under paragraph 1."

This is a repetition of our position regarding the distinction between diagnosis and treatment. It means that we receive blood specimens for the Wassermann test for primary diagnosis from any physician or any community in the state, provided that community does not provide the service in its own health department.

4. "The name and post-office address of every Wassermann patient must accompany the sample, and the question as to indigency must be answered."

Our forms have always called for name and address, but the question of indigency on the form is new, and will appear on the next lot of forms printed. We have always requested physicians to limit their demands on us to indigent cases, but the addition of this question to the form means that we intend to guard against imposition.

5. "The chief of the laboratory is authorized to mail a notification to each patient advising him that no charge is made by the state for the examination."

This is to give the chief a weapon where he thinks the physician is engaging in the reprehensible practice of collecting a fee for work which did not cost him anything. Needless to say, this proceeding will not have to be invoked very often, for most medical men are honorable.

6. "Blood specimens (for Wassermann test) will be accepted from all state institutions and county hospitals without reservation other than that county hospitals receiving pay patients may send specimens only from patients who do not pay, so certifying on the form accompanying the specimens."

This is no change from former procedure except that the question of indigency now applies to county hospitals, whereas formerly this was not inquired into. County hospitals may, of course, send bloods from cases for primary diagnosis only, regardless of social status. Syphilis is a very important, infectious, communicable and preventable disease, and it is our duty to aid in its detection the same as for diphtheria or typhoid fever.

7. "The Chief of the Bureau of Laboratories is authorized to refuse service to physicians who do not comply with the above requirements."

This requires no explanation.

A strict enforcement of this present policy will not reduce the Wassermann work of the state laboratory more than 5 per cent, for the reason that 80 per cent of our work is from state asylums, prisons, and reform schools, and from free clinics, healh centers, and county hospitals. The balance, since we have long excluded large cities and communities having their own public laboratories, is from practitioners in rural districts who ordinarily have only half a dozen specimens a year.

The chief effect of the regulations (and this is what was aimed at) will be to hold the demands on the state laboratory stationary and enable the chief to combat the few instances of imposition on the department.—***Weekly Bulletin, California Department of Public Health.***

The general objectives of all public health nursing services are:

1. To assist in educating individuals and families to protect their own health.
2. To assist in the adjustment of family and social conditions that affect health.
3. To assist in correlating all health and social programs for the welfare of the family and community.
4. To assist in educating the community to develop adequate public health facilities.—***Wisconsin Health Bulletin.***

No marked economy in school work or increase in the efficiency of instruction is possible if we are to continue to work with poor tools or poor materials. A teacher lacking in health and physical vigor is not likely to prove high in teaching efficiency, and pupils who are suffering from * * * lack of proper care are in no condition to take any large advantage of the instruction which is provided.—Elwood P. Cubberley (1930).—***Weekly Bulletin, California Department of Public Health.***

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Leaflet Regarding Rules of Publication. — California and Western Medicine has prepared a leaflet explaining its rules regarding publication. This leaflet gives suggestions on the preparation of manuscripts and of illustrations. It is suggested that contributors to this journal write to its office requesting a copy of this leaflet.

EDITORIALS*

NRA AND THE MEDICAL PROFESSION

Medical Profession Is in Accord with the NRA.—The medical profession is in full accord with the aims of the National Recovery Administration, as promulgated by President Roosevelt. Through the NRA it is hoped to reëstablish in the states of the Union economic and social conditions that will permit all citizens to work and live under those environments which Americans feel are necessary complements of modern civilization. Because all citizens are directly or indirectly involved in the development and fulfilment of the NRA program, some comments on its relation to medical practice may be permissible.

* * *

Professions Exempt from NRA.—The NRA exists by virtue of a law passed by Congress, but this law's provisions are primarily intended to apply to trades and industries rather than to the professions. Hospitals and the medical profession, especially physicians in private practice and their technical assistants, can hardly be said to come directly under the terms of the Act. Physicians, however, can voluntarily sign commitments to NRA codes, in so far as they apply.

Regarding employees in doctors' offices, for example, the statement in *The Journal of the American Medical Association* is probably legally sound:

" . . . 'However, if a physician employs more than two persons as attendants in his office, of the class of clerical employees, accountants, laborers and similar types of help, they do come under the National Recovery Act, with a minimum wage and certain maximum hours of work.' . . . "

* * *

Drug Trade Code.—It is possible for the National Industrial Recovery Act indirectly to affect the interests of the medical profession and hospitals; particularly through the code of competition designed for the retail drug trade. Some of its initial provisions are so worded that hospitals, dispensaries, and physicians who dispense medicines seemingly come within the scope of that code. If such be the final ruling of the National Recovery Administration, it could work considerable hardship on hospitals which might be obligated to employ registered pharmacists under code hours and provisions, to be constantly on service, both day and night. At a time when hospitals, and the patients in hospitals, are having so difficult a problem in meeting their financial obligations, such additional expenses could hardly be said to make living and economic conditions better for hospital personnels or hospital patients. The sales provisions of the retail drug code, if empirically carried out, could also bring about serious financial hardships to hospitals, and to physicians, dentists, nurses, and veterinarians.

* * *

Display of NRA Emblems.—The question of display of the NRA emblem by physicians has also been considerably discussed. The general sentiment seems to be that the display of the Blue Eagle in the office, or on the automobile, of a physician should only be done if the general procedure has been previously sanctioned by the county medical society. This restriction of the use by a physician of the Blue Eagle emblem is based on the principle that the emblem, if shown by a physician who is more financially prosperous than some of his fellows, might work detrimentally to the interests of less fortunate colleagues. The National Recovery Act is not intended to work harm against small enterprises or competitors. The display of the Blue Eagle in one physician's office and not in that of a neighboring colleague, might prejudice some of the lay public against the latter physician who, in that way, could lose patients and patronage; this because all citizens who sign the NRA agreements obligate themselves to patronize only those who are required to and who have likewise signed the NRA code. Since the medical profession does not come within the obligatory and legal jurisdiction of the NRA, it would seem wise for physicians, for the reasons just given, not to voluntarily display the Blue Eagle emblem unless such action has the sanction of their county medical society.

* Editorials on subjects of scientific and clinical interest, contributed by members of the California Medical Association, are printed in the Editorial Comments column, which follows.

At the time of this writing, the above seems to be the status of some NRA rulings, at least as they apply to physicians. The representatives of the American Medical Association are keeping in touch with the administrators of the NRA law and codes, and if new developments arise the profession will be made acquainted therewith.

STUDY OF PUBLIC HEALTH PROBLEMS—A PLEA FOR COUNTY SOCIETY COÖPERATION

A Suggestion for Meeting Programs.—Before the current issue of CALIFORNIA AND WESTERN MEDICINE reaches its readers, practically all component county societies of the California and Nevada Medical Associations will have resumed their autumn sessions.

This fall it is hoped that the officers and program committees will arrange to have, in addition to the usual scientific papers and discussions, two or more meetings given over to a study of some of the medico-economic problems to which so much space has been given in the official journal during the last several years.

* * *

Certain County Public Health Problems.—In every county of California the care of the indigent sick brings into action certain social, economic and medical factors worthy of the interest and understanding of every member of a county medical society. It cannot be too often repeated that constructive efforts aiming at improvement of methods in the care of the indigent sick (and of elimination from the group of charity patients of citizens who have no right to receive aid from public funds or through the gratuitous services of physicians) necessarily must be based on accurate knowledge of facts and figures. To indulge in verbal criticism of conditions without knowing about the existing institutions of each county for the care of the indigent sick, or understanding their relation to the population and economic resources, as well as to the industrial and social conditions of the community, will not make for much improvement in those places where deficiencies and malfunctions exist. First-hand and accurate knowledge is a primary requisite in any program aiming at reforms.

* * *

Special Studies Have Been Made By Certain County Medical Societies.—In some of the counties of the State the component county societies (notably Alameda, San Diego, Fresno, and San Joaquin) have made fairly comprehensive studies of these problems, presenting in their committee reports important information concerning their respective communities and suggesting or putting into operation plans for betterment, of value not only to themselves, but to all other county societies.

* * *

The State Association Offers Its Services to Component County Societies.—The California Medical Association, acting through its House of Delegates and Council, in the last several years has spent many thousands of dollars in an effort to aid its component county societies to find a satisfactory solution of some of these problems. However, something more than the expenditure of moneys, and even the active interest of a few members, is necessary. What is needed in order to get the results desired by all physicians is the real interest and active support of practically every member of every county society. To hope for so universal a coöperation is, however, little less than utopian. Nevertheless, if coöperative aid from every member is out of the question, it is not too much to expect it from the officers of every county society. For the officers and committeemen of county societies are the members who, for the time being, are the recipients of the honors of their respective organizations; and as the custodians of the interests of their fellows, and of the entire profession, they fail if they do not sense the importance of the medico-economic problems which today face the medical profession in every part of California.

Presidents, secretaries, and program committees of county societies should feel free to write to the California Medical Association Department of Public Relations for advice and aid in working out practical lines of procedure.* If outside speakers are desired, the Department and the Association Secretary, upon request, will make an effort to supply them.

It is hoped that those county societies which, as yet, have not taken steps to carry on studies of their public hospitals, dispensaries, and health departments, will get into line in this important work. Local studies and investigations nearly always can best be made by the local profession.

* * *

Other states—Michigan, for example—have brought out reports of great informative value. California and Nevada must not be laggard. With the coöperation of all component societies of the California and Nevada Medical Associations it should be possible to gather the facts and information upon which to base intelligent and united action, that can bring about the elimination of certain public health evils, which all physicians know to exist.

CALIFORNIA'S FIRST MEDICAL AUTHOR

Another Historical Contribution by Dr. George D. Lyman.—Many members of the California Medical Association have probably given themselves the pleasure of reading the absorbing historical narrative, "John Marsh, Pioneer," written by Dr. George D. Lyman of San Francisco and published somewhat more than a year ago. That excellent service to California biographical literature has now been emphasized by another contribution from Doctor Lyman in his introduction

* The personnel and addresses of all California Medical Association committees are printed in every issue of CALIFORNIA AND WESTERN MEDICINE, advertising pages 2, 4 and 6.

to the reprint of a small book,† and having for its title:

CALIFORNIA
As It is, and as It may be;
or,
A Guide to the Gold Region

F. P. Wierzbicki, M. D.
San Francisco, California
Printed by Washington Bartlett
No. 8 Clay Street
1849

By means of this welcome volume, Doctor Lyman calls our attention to the fact that the first book printed in English in California was from the pen of a physician, a medical student of the University of Warsaw, destined to become a Polish exile because of his participation in the revolt against Russia, which may account in part for his later joining in a movement against General Fremont and his authority.

The book by Wierzbicki is full of interest to every citizen of the Golden State who loves his California. But equally appealing is the story of Doctor Lyman in his search for the forgotten grave of Doctor Wierzbicki. Some paragraphs from Doctor Lyman's story of this quest may be well worth the reading, especially by those readers of CALIFORNIA AND WESTERN MEDICINE who will not have an opportunity to peruse the entire book. A few excerpts, too, from the concluding chapter of Doctor Wierzbicki's book, dealing with "Medical Observations Upon the People and Country," are also worthy of quotation.

Doctor Lyman says, in detailing his pursuit, and how he came to make it:

"Felix Paul Wierzbicki, an exiled Pole and a physician," I repeated after him, "and he wrote a guidebook to the gold regions." My curiosity was whetted. I wanted to know more about this medical man who had afforded California literature a starting-point. . . .

. . . That inscription challenged my attention. Could it be possible, I wondered, as I turned the book over, that this little pamphlet was the first book written in English and published in the West? . . .

. . . My survey convinced me of one thing: many a book on the subject of California antedated Wierzbicki's. Many of them had actually been written and published within the confines of California; but Wierzbicki's stood the test. It was the first book written in English to be published not only in San Francisco but in the state. And the further interesting thing about it was that it was conceived by a foreigner and a physician. . . .

. . . From their shelves, I took down a number of auction catalogues. I wanted to find out what sort of a record Wierzbicki's book had made for itself in the auction room. . . .

. . . Still another copy sky-rocketed to $660.

I marveled at the book. At that rate each page of the pamphlet was worth about $10! Every word had a market value of at least five cents! In three quarters of a century Wierzbicki had attained the rank of a best seller.

I found myself more curious than ever regarding Author Wierzbicki. Who was he? What had he been? I began a search for biographical data. . . .

. . . "I want to locate the grave of a Polish doctor—Felix P. Wierzbicki," I told the young woman in the office at Gray's. "Perhaps you have a record of where he was buried. He was born in Poland—so you'll probably find him in the Catholic Cemetery."

I watched as she ran a slender finger down the index of the dead. "No," she said, "not in the Catholic Cemetery. But—here he is, on Lone Mountain." As she spoke she jotted some words on a slip of yellow paper and handed it across to me. I read:

"Laurel Hill—Chain Plot—Tier 3—Grave 55."

I thanked her kindly and hurried away. . . .

. . . Up Pine Street, through the Bush Street gates to Laurel Hill, I sped. At the office—braked to a stop.

"The Chain Plot," I said to the superintendent. "I am looking for the Chain Plot.". . .

. . . "The Chain Plot," repeated the superintendent, as if endeavoring to recall some long-forgotten part of Lone Mountain. "The Chain Plot? Oh yes—over the hill yonder—beyond the mausoleums of those Washoe millionaires." He indicated a spot to the right. When I still hesitated, "Come along," he said, "I'll show you." . . .

. . . "I must locate his grave," I said conclusively, "and get the dates of birth and death from it. The introduction depends upon them. Without dates," I assured him, "there is no possibility of preparing a suitable introduction." . . .

. . . "The Chains?" I asked. "Where are they?"

"Long since rusted away, and parted—too much fog and damp on Lone Mountain," he said.

"'Tier 3,'" I read from the yellow paper. The superintendent looked about. He couldn't even locate Tier 1. . . .

. . . A clump of myrtle with shining leaves that was cascading over a low white marker, half hiding it, caught my eye.

"Back in a moment," I said to the superintendent as I swept myrtle and sand aside, disclosing a low white stone on which was carved three initials: "F. P. W." I read them again: "F. P. W." . . .

. . . Upward we pulled. The sand loosed its hold. We felt it give. With a sucking noise the square top of a marble slab emerged, ever so slightly, above the level of the mound. I leaned forward to read—shall I confess?—with what exultation:

SACRED TO THE MEMORY
OF
DR. FELIX P. WIERZBICKI

. . . "Higher—higher," I called. "There is more carved below, and I can't read it yet." The superintendent tugged with might and main, but made little impression. The sand sucked at the marker and it slipped out of sight. I went to his assistance. Like two possessed, we struggled with that piece of marble. Perspiration in rivulets coursed down our faces. Sand sunk into our shoes. But little by little the sand slackened its hold. Inch by inch we raised the tablet. Again I leaned over to read:

"Born in Charniawce, Poland, January 1, 1815. Died December 26, 1860. Highly esteemed by all who knew him."

There I had it in a brief statement. What I had sought to know. The summation of Wierzbicki's life. The date of his birth. The period of the grave. And a concise appraisal of his life. The epitaph, not a flowery one such as a man like Wierzbicki would have despised, but a brief, austere one such as he would have approved. I was elated. . . .

* * *

And among the good things handed down to us by Doctor Wierzbicki himself, are the following observations and sentiments:

. . . Those that mix spirits with their tea or coffee, are the only ones who make a rational use of the beverage; as the spirits act as an antidote to either of the drugs, modifying somewhat, their effects. We would not be, however, understood as advocating the use of spirits; far from it. They are all good in their places as medicines only. As a substitute for tea or

† Present edition from The Grabhorn Press, 510 Pine Street, San Francisco.

coffee, chocolate may be used advantageously; it is not a drug; it possesses no remedial powers, in the proper sense of the word; it is only alimentative, nourishing by its natural oil and substance. . . .

. . . California has never seen so great a mortality as within the last year, among the strangers who arrived recently; and some would lay the blame to the climate. We, however, would deny it in toto, and assert it is the fault of the patient and his physician in most cases. The diseases that may be said to be incident to the climate, are tractable, and we had the good fortune to lose not a single case as yet, be it diarrhea, dysentery, fever and ague, or what may be called California fever—a confused type of all fevers. But we have treated our patients a little differently from the routine practice, from the injunctions of books and professors. . . .

. . . In fever and ague, we are not fond of using much sulphate of quinine, except merely to interrupt the periodicity of the disease, for which great doses are not required; this done, we cleanse the bowels thoroughly, then pay attention to the diet, which should be nourishing but light. A strict attention on the part of the patient to this rule, for two or three weeks, improves him rapidly, and guards against a relapse. Under such a course of treatment as we have here briefly indicated, and which an experienced physician can easily comprehend, our patients recover without much delay. And it is our inmost conviction that the diseases of the country are not at all formidable, if properly managed; and that the climate is not the cause of the mortality that lately has been committing such a havoc in the ranks of the strangers. In our opinion, the climate of California is one of the most healthy, as a general rule, if people understand how to adapt themselves to it. . . .

. . . There is always a class of people who find fault with any climate, because it is the most convenient cloak for their follies, or an excuse for their ignorance in the art of preserving health. . . .

EDITORIAL COMMENT*

IMMUNOLOGIC EFFECTS OF ALKALINE DIETS

IX†

Several special diets have been proposed as adjuvants in the treatment of certain chronic infections, the purpose of which is a therapeutic alteration in acid-base equilibrium. Thus far, however, such dietary therapies have been largely empirical, few immunologic studies of acid-base equilibrium having been made on laboratory animals. Doctor Bonanno's [1] currently reported data are, therefore, of basic interest.

Rabbits and guinea-pigs were used by the Turin investigator, their normal acid-base equilibrium being altered by the addition of certain calcium or sodium salts to routine diets. The results with the acid diets were in accord with clinical experience: within from fifteen to thirty days there was a pronounced lowering of phagocytic power and of the bactericidal power of the blood serum, which latter was associated with a reduced complement titer. Anaphylactic susceptibility was increased. Specific antibody production was inhibited.

The results from the alkaline diets, however, were contrary to clinical expectation, since experimental alkalosis was rarely if ever of immunologic benefit to the animal. In a typical test of this type, Doctor Bonanno's control or normally fed guinea-pigs were injected intraperitoneally with a routine dose of low virulent tubercle bacilli; and these guinea-pigs survived, on an average, for ninety-five days. All of the alkali-fed guinea-pigs injected with the same dose died between the twentieth and the forty-second day.

As a general conclusion from his data, Doctor Bonanno was forced to the opinion that any experimental variation from normal acid-base equilibrium is an immunologic disadvantage to normal animals. If this is equally true in clinical medicine, immunologic benefits can be expected only in cases in which the prescribed diets correct preëxisting acid-base abnormalities.

Stanford University.

W. H. MANWARING,
Palo Alto.

PERINEPHRITIS

Perinephritis is generally secondary to infection in the kidney (pyelitis, pyelonephritis, pyonephrosis) and is in proportion to the intensity of this infection. Perinephritis of extra-renal origin is rare. The cure of perinephritis depends upon the eradication of the causative infection in the kidney. Perinephritis is frequently followed by more or less fibrous tissue reaction, with resultant perinephric adhesions or sclerosis. The term "perinephric adhesions," and not "perinephritis," expresses the true pathology after infection has been eradicated from the kidney. Perinephric adhesions, as a rule, have no significance as a cause of pain. In fact, nephropexy is done with the avowed purpose of forming adhesions to hold the kidney in place. Tuberculous kidneys are frequently surrounded by the densest adhesions, yet we frequently find that these patients never have any pain referable to the kidney, just as patients with extremely movable kidney may be entirely devoid of pain. Perinephritis, or more correctly speaking, perinephric adhesions may cause pain under the following conditions: in the adhesions are so formed as to constrict the kidney pedicle, or by contraction of scar tissue to cause torsion or disturb the normal position of the kidney with consequent interference of the renal circulation, or to interfere with urinary drainage by constricting or obstructing the ureter or pelvis of the kidney. The latter presupposes perinephritis associated with peripyelitis or periureteritis. Diagnosis depends upon demonstration by horizontal and vertical pyelography of evidence of dilatation, or interference with the motility of ureter, pelvis or calyces, and the presence or absence of malposition, torsion or immobility of the kidney. In

* This department of CALIFORNIA AND WESTERN MEDICINE presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to all members of the California and Nevada Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

† Part I of this series was printed in the February CALIFORNIA AND WESTERN MEDICINE, page 116; Part II in March, page 188; Part III in April, page 275; Part IV in May, page 380; Part V in June, page 447; Part VI in July, page 59; Part VII in August, page 133; Part VIII, in September, page 206.

1 Bonanno, A. M.: Zeitsch. f. Immunitätsforsch, 77:19 (Nov.), 1932.

the hands of an overzealous specialist who can detect abnormalities in all pyelograms, nearly all patients are now between the devil and the deep blue sea: either the kidney is afflicted with immobility, malposition or torsion as shown by prone and vertical pyelography, and therefore has perinephritis requiring nephrolysis, or the kidney has too great a range of mobility and is, therefore, a nephroptosis requiring nephropexy. Such radicalism cannot be too strongly condemned. These cases require the most careful differential diagnosis and judgment. Every other possible cause of pain in the kidney region should be carefully ruled out. Once a definite diagnosis has been made, treatment calls for equally careful judgment as to whether such benign procedures as eserin medication, physiotherapy, ureteral dilatation, and ptosis belt will meet the situation; or whether surgical treatment may be indicated. Surgery is indicated as a last resort in a small percentage of cases. Here again the judgment and skill of the well-trained urologist are essential in determining whether the procedure of choice is ureteropyelonephrolysis, renal sympathectomy, nephropexy, or a combination of these measures. Of course, perinephric adhesions reform as a direct result of operation, but usually there is no recurrence of pain.

450 Sutter Street.

THOMAS E. GIBSON,
San Francisco.

CERTAIN RELATIONSHIPS BETWEEN THE PANCREAS AND THE LIVER IN CARBOHYDRATE METABOLISM

Experimental work on the relationship of insulin to liver glycogen has shown that in depancreatized animals the liver becomes glycogen-free in about forty-eight hours after the pancreatectomy. If, following the complete disappearance of glycogen from the liver of a depancreatized animal, insulin with sugar is given, there occurs a more or less gradual rise in the liver glycogen toward normal. It is of interest to note that under the same conditions, when the liver is glycogen-free, the administration of sugar without insulin is followed by some glycogen in the liver up to a maximum quantity of about one per cent. Even though this amount is below the normal quantity, it brings to our attention the fact that a limited glycogen storage can take place in the liver even though there is no insulin from the pancreas. If insulin is given along with the sugar, a greater degree of glycogen formation occurs, so that the liver glycogen may reach a normal level.

The blood sugar in these depancreatized animals remains persistently high until insulin is given, following which it may be diminished to almost any low level, depending upon the amount of insulin given. When a certain minimum blood sugar level is reached, the characteristic hypoglycemic reaction occurs. It is interesting to note that the hyperglycemia of the depancreatized animals persists in the absence of food intake, and that actual hypoglycemia occurs when the liver is removed along with the pancreas. It can therefore readily be concluded that the liver is responsible for the hyperglycemia of depancreatized animals, not only due to the fact that it does not store glycogen, but because it forms glucose from other products such as proteins and fats.

It is of further interest to find that, even though hypoglycemia occurs following the removal of the liver with the pancreas, the rate of reduction of the blood sugar will be more rapid when insulin is given. The rate of disappearance of sugar from the circulation of the dehepatized and depancreatized animals, following the administration of insulin, is so much faster than would occur if no insulin were given, that there can be no question that the liver is not essential for the hypoglycemic action of insulin.

When a normal dog is placed upon a starvation program, there occurs a steady decrease in liver glycogen. With continuous sugar infusion of about 0.8 milligram of sugar per kilogram of body weight per hour into the portal vein, the hepatic artery, or the femoral vein, a rise in liver glycogen occurs. In both instances the distribution of glycogen in the liver remains uniform. These are quite well recognized facts. It is also fully recognized that the injection of epinephrin into a normal animal lowers the liver glycogen content due to a definite glycogenolysis, which occurs with a resultant possible hyperglycemia. It is noteworthy that this particular reaction to the epinephrin is not prevented by insulin.

Contrary to expectation, most investigators find that the injection of insulin with, or without sugar, into a normal animal produces a drop in liver glycogen content. One group of investigators finds that if slow infusions of sugar and insulin be given to normal dogs, glycogen storage in the liver can be practically prevented. With this in mind, it may be quite readily concluded that the diabetic dog and the normal dog do not give the same responses to insulin.

W. E. MACPHERSON,
Loma Linda.

Today is an undoubted swing back toward the simple diet, and a growing skepticism toward the food fads. There is still much to be done, however, in the way of education, regarding the importance of avoiding food fads and the necessity for a general well-balanced diet. Diet fads, food fads, no butter, no potatoes, no meat, no bread, are undoubtedly the underlying causes of many a person's ills, both bodily and mentally. It is felt that the best way to meet the situation is to let research answer (Surgeon General H. S. Cumming).—*Weekly Bulletin, California Department of Public Health.*

I hope that overemphasis upon normal dieting is a passing fad and that our people, especially our younger women, will learn the importance of having well-nourished bodies and brains. For that they must eat well-balanced diets of sufficient quantities of the various constituents, among which none is more important than bread (Surgeon General H. C. Cumming).—*Weekly Bulletin, California Department of Public Health.*

We are paying fifty times as much for education in the three R's as for health work.—Louis I. Dublin (1928).

STATE MEDICAL ASSOCIATIONS

This department contains official notices, reports of county society proceedings and other information having to do with the state associations and their component county societies. The copy for the department is edited by the state association secretaries, to whom communications for this department should be sent. Rosters of state association officers and committees and of component county societies and affiliated organizations, are printed in the directories noted under Miscellany, on the front cover index.

CALIFORNIA MEDICAL ASSOCIATION

GEORGE G. REINLE.....President
CLARENCE G. TOLAND.....President-Elect
EMMA W. POPE.....Secretary-Treasurer

Resolution Adopted by the Council at Its Meeting September 30, 1933

Resolved, That the Council recognizes roentgenologists and other doctors of medicine specializing in pathology and clinical laboratory diagnostic methods as consultants and not technicians.

COUNCIL MINUTES

Minutes of the Two Hundred and Nineteenth Meeting of the Council of the California Medical Association

The following minutes were approved by the Council at its two hundred and twentieth meeting, held at Los Angeles, September 30, 1933:

Held in the offices of the California Medical Association, Room 2004, 450 Sutter Street, San Francisco, Saturday, May 27, 1933, at 10 a. m.

Present. — Doctors George G. Reinle, president; Clarence G. Toland, president-elect; Edward M. Pallette, Speaker; T. Henshaw Kelly, chairman of the Council; and Councilors W. W. Roblee, Carl R. Howson, Henry J. Ullmann, Fred R. DeLappe, Alfred L. Phillips, Karl L. Schaupp, Charles E. Schoff, George G. Hunter, C. O. Tanner, William H. Kiger, M. R. Gibbons, J. B. Harris; Charles A. Dukes, chairman of Committee on Public Relations; George H. Kress, editor; Emma W. Pope, secretary-treasurer; and Hartley F. Peart, general counsel. Doctors Walter B. Dickie and Daniel Crosby were also present.

Absent. — Doctors O. D. Hamlin and Henry S. Rogers.

1. **Call to Order.**—The meeting was called to order by the chairman, T. Henshaw Kelly.

2. **Chairman of Committee on Public Relations.**—The secretary stated that the Committee on Public Relations had elected Charles A. Dukes as chairman of the Committee on Public Relations.

Action by the Council.—On motion of Hunter, seconded by Phillips and unanimously carried, the following resolution was adopted:

Resolved, That the election of Charles A. Dukes as chairman of Public Relations be approved by the Council.

The chairman then announced Doctor Dukes as a member of the Council.

3. **Financial Statement.** — Financial report for the month of March, 1933, was presented by the secretary and approved by the Council.

4. **Auditing Committee.**—The chairman of the Council stated that in accordance with constitutional provision, he had appointed as member of the Auditing Committee Doctors Karl L. Schaupp, Oliver D. Hamlin and Morton R. Gibbons, and had named Doctor Schaupp as chairman.

The membership of the committee was approved as presented.

5. **Arrangements Committee for 1934.**—The chairman stated that in accordance with Chapter IV, Section 6a, of the Constitution, which provides that the chairman of the Council, subject to the approval of the Council, shall, at least six months before the regular annual session, appoint a committee on arrangements, he had conferred with Doctor Roblee and had appointed as members of the committee William W. Roblee (chairman), Hervey S. Faris, G. Wayland Coon, Bon O. Adams, and Arthur W. Walker, all of Riverside.

6. **Retired Membership.**—A request from the Santa Cruz County Society was presented that retired membership in the California Medical Association be granted to Grant Hatch of Santa Cruz.

Action by the Council.—On motion of Hunter, seconded by Kress, and unanimously carried, the following resolution was adopted:

Resolved, That Grant Hatch, M. D., Santa Cruz, member of the Santa Cruz County Medical Society, be granted retired membership in the California Medical Association.

7. **Nineteen Hundred and Thirty-Four Annual Session.**—(a) *Length of Annual Session.* The secretary reported that at the luncheon meeting of the Program Committee and section officers during the Del Monte annual session discussion was had of the advisability of an intensive three-day session in lieu of the present four-day session; that the section meetings be held from 2 to 5 on Monday, from 9 to 11 on Tuesday, with Tuesday afternoon free for entertainment, and that section meetings be held both in the morning and afternoon on Wednesday.

Action by the Council.—On motion of Hunter, seconded by Schaupp, and unanimously carried, the following resolution was adopted:

Resolved, That the 1934 annual session be limited to a three-day session.

(b) *Date of Annual Session.*—Discussion was had of the date of the next annual session, and on motion of Phillips, seconded by Reinle and unanimously carried, the following resolution was adopted:

Resolved, That the date of the next annual session be set as April 30, May 1 and 2, 1934.

(c) *Scientific Exhibits.*—The secretary stated that the Program Committee felt that it was desirable to have a Committee on Scientific Exhibits to solicit and to determine the merits of exhibits offered for presentation at annual sessions and to arrange the details of the display of such exhibits.

Action by the Council.—On motion of Reinle, seconded by DeLappe, and unanimously carried, the following resolution was adopted:

Resolved, That the chairman of the Council appoint a committee on scientific exhibits, consisting of five members, that shall have charge of the solicitation, acceptance and arrangements for scientific exhibits at the annual session.

8. **State and County Fairs.**—The secretary read a letter from the Director of the Department of Public Relations stating that the total cost of exhibits at the Sacramento State Fair and the Los Angeles County Fair in 1932 was $1,088.30 and that similar exhibits this year would cost considerably less since the material purchased last year was still on hand. Doctor Dickie suggested that a portion of the income from the Herzstein bequest be used to defray the expense of such exhibits.

Action by the Council.—On motion of Ullmann, seconded by Gibbons and unanimously carried, the following resolution was adopted:

Whereas, The exhibit of this Association for presentation at the state and other fairs, is educational and informational and an effective means of combating quackery; now, therefore, be it

Resolved, That such an exhibit be held in 1933, and that a portion of the income from the Herzstein bequest necessary to defray the expense is hereby allocated.

9. **Fall Council Meeting.**—Discussion was had of the date of the fall meeting of the Council to be held at Los Angeles, and on motion of Kress, seconded by Reinle, and unanimously carried, the chairman of the Council was authorized to set the date of the meeting.

10. **California and Western Medicine.**—A letter was presented by the secretary from an advertiser of long standing suggesting that a greater discount be allowed on yearly advance payment on yearly advertising contracts. It was stated that at present a discount of 5 per cent was allowed for advance payments on monthly and yearly contracts.

Action by the Council.—On motion of Ullmann, seconded by Gibbons, and unanimously carried, the following resolution was adopted:

Resolved, That a discount of 10 per cent be allowed on full advance payments for yearly advertising contracts.

11. **Southern Advertising Agent.**—The secretary stated that in accordance with councilor action, Mr. A. A. Butterworth had been advised that his contract covering advertising in the southern territory was terminated.

The editor stated that he had contacted Mr. Butterworth and had secured his approval of an abrogation of the six months' notice requirement for termination of contract. Doctor Kress then read a letter from Mr. Butterworth stating that he was setting June 15, 1933, as the effective date of the termination of the contract to provide for the final decision on four advertising contracts now pending. Doctor Kress stated that it was his understanding and Mr. Butterworth's that he would be allowed commission on contracts secured by him up to June 15, 1933.

Action by the Council.—On motion of Kress, seconded by Reinle and unanimously carried, the following resolution was adopted:

Resolved, That the general counsel be instructed to write Mr. Butterworth regarding the details of the termination of his contract.

Doctor Kress stated that it was his understanding that the southern councilors and the editor were empowered to confer with Doctor Wilson and the advertising agent for the Los Angeles County Bulletin regarding the handling of advertising in the southern territory.

Action by the Council.—On motion of DeLappe, seconded by Hunter and unanimously carried, the following resolution was adopted:

Resolved, That the southern councilors and the editor be empowered to make tentative arrangements for the handling of advertising in the southern territory, and that a report be submitted to the Executive Committee, the Executive Committee to have power to act.

12. **Publication costs.**—The editor read a letter from the James H. Barry Company stating that commencing with the May number of CALIFORNIA AND WESTERN MEDICINE they would deduct an additional $50 from the base price heretofore charged.

13. **Director of Department of Public Relations.**—It was stated that the Committee on Public Relations at a meeting held today had recommended that Walter M. Dickie be retained as director of the Department of Public Relations.

Action by the Council.—On motion of Schaupp, seconded by Gibbons and unanimously carried, the following resolution was adopted:

Resolved, That the recommendation of the Committee on Public Relations that Walter M. Dickie be appointed director of the Department of Public Relations for the ensuing year be approved and that Walter M. Dickie be and is hereby appointed director at the salary approved by the House of Delegates, viz., $400 per month.

14. **Expert Medical Testimony.**—Doctor Hunter stated that the president of the Los Angeles society had appointed a committee to investigate and evolve a plan whereby the handling of medical testimony in courts could be improved. As a member of the Los Angeles committee, Doctor Hunter asked that the chairman of the Council be instructed to appoint a committee of some one member with which the Los Angeles committee may confer.

Action by the Council.—On motion of Hunter, seconded by Ullmann and unanimously carried, the following resolution was adopted:

Resolved, That the Council recommend to the Department of Public Relations that it coöperate with the Bar Association in the matter of improvement of the conditions relating to expert medical testimony.

15. **Membership Campaign.**—Discussion was had of the advisability of increasing the membership of the Association. Doctor Howson explained the present scheme of increasing membership in Los Angeles County by offering a commission on the first year's dues to the member securing the new member.

Action by the Council.—On motion of Pallette, seconded by Schaupp and unanimously carried, the following resolution was adopted:

Resolved, That the Council recommend to the Department of Public Relations that during the next year it conduct a campaign to secure desirable members for the California Medical Association in conference with the Standing Committee of the State Society and the local committees in the various counties.

16. **Medical Publicity.**—Doctor Howson stated that a valuable source of publicity was being overlooked in the public libraries of the state; that he had had occasion to investigate recently and had found that the public libraries in the southern part of the state had very few authoritative books on popular health and medical subjects, such as antivivisection, sun bathing, etc. Doctor Howson suggested that the Department of Public Relations compile a list of desirable books.

Action by the Council.—On motion of Howson, seconded by Ullmann and unanimously carried, the following resolution was adopted:

Resolved, That the Council recommend to the Department of Public Relations that it compile a small list of books and journals on health and hygienic subjects suitable for placement in public libraries and that if in its judgment it seems desirable, it recommend that a portion of the Herzstein bequest be used for the purchase and such placement of these books.

Action by the Council.—On motion of Ullmann, seconded by Gibbons and unanimously carried, the following resolution was adopted:

Resolved, That the Committee on Public Relations arrange for the placing in all State and County Fair exhibits at which the Association exhibits, placards or suitable signs listing the names of desirable books and urging that the public ask the libraries to carry same.

17. **Medical Service Plans.**—The general counsel stated that the Committee on Public Relations had discussed type "D" of the Medical Service plans and had recommended that it be retained as a desirable type of service.

Action by the Council.—On motion of Gibbons, seconded by Ullmann and unanimously carried, the following resolution was adopted:

Resolved, That the action of the Committee on Public Relations recommending that type "D" be retained as a suitable type of service, be approved.

Discussion was then had of the possibilities for coöperation and control of hospitals offering this service. It was suggested that it might be desirable to include a provision in the approval stating "provided that adequate representation of the county medical association is given in the administration board of such plan."

It was pointed out that the type of service offered under plan "D" must have the approval of the Council and the Committee on Public Relations before becoming effective.

In accordance with the suggestion of the Committee on Public Relations, on motion duly made, seconded and unanimously carried, the following resolution was unanimously adopted:

Resolved, That Principle 5 be changed to read as follows: "Professional service under any plan adopted shall be limited to the membership of a component county society or groups thereof, and no plan for medical and/or hospital service shall be recognized until it has received the endorsement of the Council after its approval by (1) the affirmative vote of two-thirds of the members of such society provided in the case of a county society having a membership of 450 or over, the affirmative vote of two-thirds of the members voting, shall be sufficient for approval; and (2) the Committee on Public Relations. The vote of the membership of the component society herein provided for shall be had at a meeting of the members or by mail or both only after due written notice of the details of the proposed plan and the time and place of any such meeting or vote shall have been given to all members."

The general counsel then spoke of the progress being made in Alameda County and the activities in San Mateo County.

Doctor Crosby, member of the Committee on Public Relations, being present, spoke of the probable problem that would arise over installation of service in Alameda County to certain localities in Contra Costa County. It was pointed out that the same problem was present in San Francisco and San Mateo and elsewhere in the state.

Action by the Council.—On motion of Gibbons, seconded by Ullmann and unanimously carried, the following resolution was adopted:

Resolved, That the president of the Association, the chairman of the Council and the chairman of the Committee on Public Relations be instructed to formulate an additional provision providing for coöperation between two or more county societies in any such plan.

It was pointed out that Alameda County was nearing the completion of the plans for its service and wanted the approval of the Council and the Public Relations Committee before proceeding, and that the next Council meeting would not be held until fall.

Action by the Council.—On motion of Pallette, seconded by Kiger and unanimously carried, the following resolution was adopted:

Resolved, That the Executive Committee be authorized to act for the Council on any plan after said plan has received the approval of the Committee on Public Relations.

18. **Publicity Agent.**—The president presented the publicity which had been secured in the various newspapers throughout the state on the Del Monte session. Doctor Reinle stressed the value of the proper release of medical news and suggested that Mr. Howard Hill be secured as part-time publicity agent for the Association for the ensuing year at an expense of $500.

Action by the Council.—On motion of Ullmann, seconded by Phillips and unanimously carried, the following resolution was adopted:

Resolved, That the Association negotiate and secure the part-time services of Mr. Howard Hill at a salary of $500 for the present fiscal year and that such expenditure be made from the income of the Herzstein bequest.

19. **Legislation.** — Doctor Harris, chairman of the Committee on Public Policy and Legislation, submitted a detailed written report on legislation. At the request of the editor, the report was ordered published in the next issue of the JOURNAL.

Doctor Harris then reported verbally on the main bills of medical interest.

The chairman of the Council then read a letter which had been addressed to him by the executive secretary of the California Public Health League of Los Angeles, Mr. Ben Read.

Action by the Council.—On motion of Hunter, seconded by Phillips and unanimously carried, the following resolution was adopted:

Resolved, That the letter of Mr. Read re Doctor Harris' service to the medical profession, be published in the JOURNAL.

20. **Los Angeles County Medical Association Membership.**—A letter was read from the Los Angeles County Medical Association asking that the State Association grant a similar rebate on the dues of new members to that granted by the Los Angeles County Medical Association, *i. e.*, 25 per cent of the first year's dues.

Action by the Council.—On motion of Pallette, seconded by Howson, the following resolution was adopted:

Resolved, That in any county society where a certain percentage, not to exceed 25 per cent of the first year's dues of new members, is given to members of the society for securing such new members, the state society will pay to the county society for transmittal to the members who obtained the new members a like percentage of the first year's dues for the present fiscal year only.

A vote was then taken on the motion. Five voted in the affirmative and ten in the negative. Motion defeated.

21. **Resolution No. 4—Corporate Practice.** — The secretary read Resolution No. 4, adopted by the House of Delegates at the Del Monte session, instructing the Council to take such action as it deems proper to enforce the interpretation of the Medical Practice Act as interpreted by the Blake decision.

Doctor Schoff explained the activities of the Board of Medical Examiners. Full discussion was then had.

It was the sense of the Council that the Association coöperate with the Board of Medical Examiners in any way possible.

22. **Resolution No. 2—Health Insurance.**—Resolution No. 2 relative to the appointment of a committee of the Senate to investigate and report on health insurance, and the appointment of a similar committee by the Council was read.

Action by the Council.—On motion of Gibbons, seconded by Phillips and unanimously carried, the following resolution was adopted:

Resolved, That a committee of three be appointed by the chairman that shall have charge of all matters in connection with the study, and that it shall be authorized to coöperate with all departments of the Association and shall report progress to the Council.

The membership of the committee named, after discussion by the Council, was Doctors Frederick Gundrum of Sacramento, Carl R. Howson of Los Angeles, and T. Henshaw Kelly of San Francisco.

23. **Offices of Association.** — The general counsel stated that the Four Fifty Sutter Corporation had authorized him to state that it would make a reduction of 20 per cent on the present rental price of Room 2039, occupied by the Department of Public Relations.

The secretary reported that after June 15, one stenographer only would be retained by the Department of Public Relations and the Cancer Commission.

24. **Druggists' Association.**—Morton R. Gibbons presented a letter regarding liquor prescriptions.

Action by the Council.—On motion of Gibbons, duly seconded and carried, the matter was tabled.

25. **Membership of the American Medical Association House of Delegates.**—The proposed amendment to the Constitution of the American Medical Association, Section 2, Article 5, which would make all presidents of state associations members of the House of Delegates was discussed. Members of the Council felt that the addition of fifty-four members to the House of Delegates was not desirable.

It was the sense of the Council that the California delegates be advised that the Council feels that the addition of presidents of state societies as members of the House of Delegates is an unwise change in the Constitution of the American Medical Association.

26. **Adjournment.**—There being no further business the meeting adjourned.

T. Henshaw Kelly, *Chairman.*

Emma W. Pope, *Secretary.*

* * *

EXECUTIVE COMMITTEE

Digest of the Minutes of the One Hundred and Thirty-Eighth Meeting Held at San Francisco, August 19, 1933

1. Call to order.

2. Financial statements for May and June, 1933, were presented and approved.

3. Request from the Federal Relief Administration for coöperation of the California Medical Association was presented. Discussion and approval was had of tentative plans for home care of persons on federal relief for submission to the Emergency Relief Administration.

The Executive Committee authorized a committee, consisting of the president, president-elect, chairmen of the Council, the Executive Committee, the Committee on Public Relations, the Committee on Public Policy and Legislation, and the secretary, to act for the California Medical Association to coöperate with the Emergency Relief Administration, if desired by it, through the various component county medical societies in aiding the development of medical care by the county relief committees.

The committee authorized Doctors Harris, Schaupp, and Kelly to present, in proper form, the suggested plan for home medical care of the unemployed on relief to the Emergency Relief Administration.

4. The general counsel presented excerpts from an opinion rendered by the Attorney General concerning interpretation of the clinic bill. The Attorney General's opinion sustained the legality of the law.

5. The general counsel submitted a report on the present status of county hospitals.

6. A letter from the secretary of the Pacific Roentgen Club was presented. Recommendation by the Executive Committee that members of the California Medical Association place themselves under the blanket NRA code if any are required to do so under the classification of the Act, and disapproval of members allying themselves with lay laboratories and x-ray groups in associations for the formulation and submission of codes. The secretary was authorized to transmit the action of the Executive Committee to all component county societies.

7. Adjournment.

Karl L. Schaupp, *Chairman.*

Emma W. Pope, *Secretary.*

EXTENSION LECTURE PROGRAM

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(b) Neurologic Surgery
Glaser, Mark Albert

(c) Plastic Surgery
Barnes, H. O. — O'Connor, Gerald B.
Kiskadden, W. S. — Pierce, George W.

(d) Thoracic Surgery
Brown, A. Lincoln

Neuropsychiatry.
Gerstle, Mark

Orthopedics.
Gottlieb, A. — Lowe, Frank A.

Pathology.
Bolin, Zera E. — Kellogg, W. H.

Pediatrics.
Sweet, Clifford

Pharmacology and Chemistry.
Leake, C. D.

Radiology.
Pindell, M. L. — Soiland, Albert

Urology.
Ferrier, Paul A. — Redewill, Francis S.
Wesson, Miley B.

2. INDEX TO SPEAKERS

H. O. Barnes, M. D., 512 Pacific National Building, Los Angeles.
1. Deformities of Facial Features—Their Surgical Correction. (Lantern slides.)
2. Deformities of Body Contour—Their Surgical Correction. (Lantern slides.)

Hans Barkan, M. D., Stanford University Hospital, San Francisco.
1. Present Methods of Operation on Retinal Detachment.
2. Modern Conceptions of Strabismus Operations.
3. Unusual Aspects of Industrial Injuries to the Eye.

Zera E. Bolin, M. D., 450 Sutter Street, San Francisco.
1. The Economics of Pathology.
2. The Medical Expert.
3. The Newer Knowledge of Laboratory Diagnosis.

A. Lincoln Brown, M. D., Medico-Dental Building, 490 Post Street, San Francisco.
1. Surgery in Pulmonary Tuberculosis. (Lantern slides.)
2. Surgery of Lung Abscess, Empyema and Bronchiectasis. (Lantern slides.)
3. Postoperative Care. (Lantern slides.)

Pan S. Codellas, M. D., Schroth Building, 240 Stockton Street, San Francisco.
1. Medicine in the Sacred Books of the Leading Religions of the World.
2. The Birth, Growth and Importance of Byzantine Medicine.
3. The Theory and Practice of Alexandrian Medicine.

Paul A. Ferrier, M. D., Professional Building, 65 North Madison Avenue, Pasadena.
1. Present Status of Prostatic Resection.
2. Care of Prostate by General Practitioner.

Ernst Gehrels, M. D., 734 Medico-Dental Building, 490 Post Street, San Francisco.
1. Surgical Management of Gastric and Duodenal Ulcer.
2. Choice of Procedure in Resection of Large Intestine.
3. Preservation of Sphincter in the Radical Operation for Cancer of the Rectum.

Mark Gerstle, M. D., Union Square Building, 350 Post Street, San Francisco.
1. Multiple Sclerosis.
2. Spinal Cord Tumors.
3. Polyneuritis—Newer Conceptions of Its Pathogenesis.

Edgar L. Gilcreest, M. D., Fitzhugh Building, 384 Post Street, San Francisco.
1. Unrecognized Injuries of the Shoulder and Arm.
2. Ruptures and Tears of Muscles and Tendons of the Lower Extremity.
3. Traumatic Aneurysm and Arteriovenous Fistula.

Mark Albert Glaser, M. D., 356 South Rossmore Street, Los Angeles.
1. Encephalography.
2. Differential Diagnosis of Surgical and Nonsurgical Diseases of the Nervous System.
3. Differential Diagnosis of Facial Pains.

A. Gottlieb, M. D., 1240 Roosevelt Building, 727 West Seventh Street, Los Angeles.
1. Obscure Foot Lesions.
2. Hallus Valgus.

George N. Hosford, M. D., 1242 Medico-Dental Building, 490 Post Street, San Francisco.
1. The O'Connor Operation. (Motion picture with lecture.)

Samuel H. Hurwitz, M. D., 1214 Medico-Dental Building, 490 Post Street, San Francisco.
1. Value of Intratracheal Iodized Oil in Chronic Intractable Asthma.
2. Treatment of Allergic Diseases.
3. Evaluation of the Desensitization Treatment of Asthma.

W. H. Kellogg, M. D., State Hygienic Laboratory, Berkeley.
1. The Approval of Laboratories by the State Department of Public Health.
2. The Prevention of Diphtheria.
3. The Service Provided by the State Laboratories for Physicians in Rural Districts.

Eugene S. Kilgore, M. D., 724 Medico-Dental Building, 490 Post Street, San Francisco.
1. Modern Conceptions of Coronary Disease.
2. Symptomatic Interrelations of Heart and Abdomen.

William S. Kiskadden, M. D., Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.
1. General Reconstructive and Plastic Surgery. (Lantern slides.)
2. Treatment and Prognosis of Harelip and Cleft Palate. (Lantern slides.)
3. Correction of Congenital Defects of Children. (Lantern slides.)

Fred H. Kruse, M. D., Fitzhugh Building, 384 Post Street, San Francisco.
1. Diseases of Stomach.
2. Diseases of Colon.
3. Diseases of Liver and Gall-Bladder.

Robert W. Langley, M. D., Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.
1. Diagnosis and Treatment of Coronary Disease.
2. X-Ray Examination of the Heart.
3. Diagnosis of Cardiac Irregularities.

Chauncey D. Leake, Ph. D., University of California Medical School, San Francisco.
1. The Development of Ideal Surgical Anesthesia.
2. Recent Advances in Pharmacology.
3. California's First Great Scientist—A Forgotten Pioneer Physician.

H. Lisser, M. D., 240 Fitzhugh Building, 384 Post Street, San Francisco.
1. The Clinical Indications for the Proper Use of Thyroid Substance. (Lantern slides.)
2. The Newer Hormones. (Lantern slides.)
3. Endocrine Disorders of the Adrenal Gland. (Lantern slides).

Frank A. Lowe, M. D., Flood Building, 870 Market Street, San Francisco.
1. Club-Feet — Congenital and Acquired. (Three reels of motion pictures.)
2. Fractures of Neck of Femur—Closed and Operative Treatment. (Motion pictures—two reels).
3. Fractured Humeri. (One reel of motion picture, and lantern slides.)

C. J. Lunsford, M. D.
(See topics under H. J. Templeton, M. D.)

Stanley H. Mentzer, M. D., 450 Sutter Street, San Francisco.
1. Bile Peritonitis.
2. Gall-Stones—Their Formation, Migration, and Treatment.
3. The Treatment of Acute Cholecystitis.

Miller, Hyman, M. D.
(See topics under George Piness, M. D.)

W. W. Newman, M. D., 450 Sutter Street, San Francisco.
1. Angina Pectoris—Treatment and Diagnosis.
2. Acute Coronary Artery Occlusion — Treatment and Diagnosis.
3. Various Cardiac Irregularities — Diagnosis and Treatment. (Moving pictures of living animal hearts.)

Gerald B. O'Connor, M. D., 723 Medico-Dental Building, 490 Post Street, San Francisco.
(See topics under George Warren Pierce, M. D.)

George Warren Pierce, M. D., and Gerald Brown O'Connor, M. D., 723 Medico-Dental Building, 490 Post Street, San Francisco.
1. The Practical Application of Reconstruction Surgery. (Moving pictures and lantern slides.)
2. The Treatment of Cleft Lip and Cleft Palate. (Moving pictures and lantern slides.)
3. The Treatment of Burns and Burn Scars. (Moving pictures and lantern slides.)

Philip H. Pierson, M. D., 1228 Medico-Dental Building, 490 Post Street, San Francisco.
1. Early Diagnosis and Treatment of Pulmonary Tuberculosis, with Special Reference to the Differential Diagnosis.

2. Pulmonary Carcinoma—Its Early Diagnosis and Treatment.
3. Foreign Bodies in the Lung—Differential Diagnosis and Treatment.

M. L. Pindell, M. D., Los Angeles County Health Department, Los Angeles.
1. Childhood Tuberculosis Roentgenologically Considered.

George Piness, M. D., and Hyman Miller, M. D., 608 Medical Office Building, 1136 West Sixth Street, Los Angeles.
1. Food Factors in Allergy.
2. Allergy in Infancy and Childhood.
3. The Treatment of Bronchial Asthma in General Practice.

D. Schuyler Pulford, M. D., 926 J Street, Sacramento.
1. Convulsive Seizures—Cause and Cure.
2. Tissue Pathology—Practical Value to the Surgeon.
3. The Cancer Problem.

J. Marion Read, M. D., 1530 Medico-Dental Building, 490 Post Street, San Francisco.
1. Pulse Irregularities and the Electrocardiogram.
2. Recent Advances in Endocrinology.
3. Blood Pressure—Clinical and Physiologic Aspects.

Alfred C. Reed, M. D., Union Square Building, 350 Post Street, San Francisco.
1. Medico-Social Backgrounds in India. (Illustrated.)
2. Amebiasis. (Lantern slides.)
3. Bacillary Dysentery. (Lantern slides.)

Frances H. Redewill, M. D., 522 Flood Building, 870 Market Street, San Francisco.
1. Renal Sympathectomy—Purpose and Details of This Operation. (Lantern slides.)
2. Latest Status on Treatment of Wassermann-Fast Cases. (Lantern slides.)
3. Ureteral Strictures—Various Types of Catheters Used and Methods of Application. (Lantern slides.)

Esther Rosencrantz, M. D., San Francisco Hospital, San Francisco.
1. Unusual Forms of Pulmonary Tuberculosis.
2. Chaulmoogra Oil in Tuberculous Skin Lesions.
3. Rollier Treatment in Tuberculosis. (Lantern slides.)

Albert H. Rowe, M. D., 242 Moss Avenue, Oakland.
1. The Challenge of Allergy in Medical Practice.
2. The Treatment of Bronchial Asthma and Hay Fever.
3. Present Problems in Diabetes Mellitus.

John J. Sampson, M. D., 1530 Medico-Dental Building, 490 Post Street, San Francisco.
1. Diagnosis and Care of Coronary Artery Occlusion and Its Sequelae.
2. Cardiac Risks in Surgery and Obstetrics.
3. Rationale of Uses and Failures in Cardiac Therapy of Digitalis, Quinidin, Barium, and Potassium.

H. Clare Shephardson, M. D., 204 Fitzhugh Building, 384 Post Street, San Francisco.
1. Treatment of Diabetes Mellitus.
2. Discussion of Diabetic Coma.
3. Complications of Diabetes Mellitus.

John Hunt Shephard, M. D., 608 Medico-Dental Building, San Jose.
1. Diseases of the Thyroid Gland.
2. Diseases of the Esophagus. (Lantern slides.)
3. Traction in the Treatment of Fractures.

Albert Soiland, M. D., 1407 South Hope Street, Los Angeles.
1. Observations of Uterine Cancer Treated by Radiation, and Results, During the Past Fifteen years.
2. Our concep on of the Management of Breast Cancer.
3. Electrocoagulation and Radiation in the Treatment of Skin Malignancies.

Clifford Sweet, M. D., 242 Moss Avenue, Oakland.
1. The Child as a Patient. A discussion of the child as a patient with reference to the physical and psychic characteristics peculiar to him.
2. The Treatment of Acute Infection in Children.
3. Diagnosis, Classification, and Treatment of Acute Nephritis During Childhood.

H. J. Templeton, M. D., and C. J. Lunsford, M. D., 3115 Webster Street, Oakland.
1. Ringworm of the Feet. Based upon work done at the University of California.
2. Premalignant and Malignant Conditions of the Skin. (Lantern slides or moving pictures.)
3. The Common Dermatoses Seen in General Practice.

Howard Guyon Trimble, M. D., 707 Latham Square Building, 508 Sixteenth Street, Oakland.
1. The Preventorium Child.
2. Chest Surgery Clinic (with collaboration of surgical colleague).
3. Diagnostic Clinic on Diseases of the Chest.

C. Van Zwalenburg, M. D., 308 Citizens National Bank Building, Riverside.
1. The Cause of Appendicitis. (Moving picture.)
2. Dehydration the Cause of Heat Exhaustion.
3. Deoxygenation a Factor in Infection with Pus Bacteria.

William C. Voorsanger, M. D., 1001 Medico-Dental Building, 490 Post Street, San Francisco.
1. The Treatment of Pulmonary Tuberculosis.
2. Pulmonary Conditions Wrongly Diagnosed as Tuberculosis. (Lantern slides.)
3. Exudative Tuberculous Lesions. (Lantern slides.)

Miley B. Wesson, M. D., 939 Medico-Dental Building, 490 Post Street, San Francisco.
1. Diseases of the Prostate: Their Treatment, Medical and Surgical.
2. Diseases of the Kidney and Ureter—Symptoms and Treatment.
3. Diseases of the Bladder—Symptoms and Treatment.

Rodney A. Yoell, M. D., 1444 Medico-Dental Building, 490 Post Street, San Francisco.
1. Surgery of the Common Duct.
2. Incomplete Saline Jaundice.

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Additional Educational Films

Bronchoscopy and Esophagoscopy on the Cadaver and the Living. By Samuel Iglauer, M. D., 707 Race Street, Cincinnati, Ohio. Sixteen millimeter film, 298 feet long. Rental cost is $5 per day for the first three days that the film is shown, and $3 per day thereafter.

Abbreviated Canti film. A film showing the behavior of living tissue *in vitro* and the effect of radium upon living cells. By R. Canti, M. D., Strangeways Research Hospital, Cambridge, England. This film can be secured from the American Society for the Control of Cancer. Thirty-five millimeters and sixteen millimeters, one reel requiring about ten minutes for the showing. Rental cost: This film is available for booking without cost to medical societies. Transportation charges only.

Endocarditis and Valvular Disease. Made by Dr. Emanuel Libman. May be obtained from the American Heart Association, Inc., 450 Seventh Avenue, New York, N. Y. May be used in the Spencer lens delineascope. Rental cost is $5.

Gastric Peristalsis. By Walter C. Alvarez, M. D., Mayo Clinic, Rochester, Minnesota. This film may be rented for a small amount from the Eastman Company.

Good Hospital Care. Approved by the American College of Surgeons, 40 East Erie Street, Chicago. Thirty-five millimeters, two reels, talking motion picture, safety stock. No charges for the use of this film other than carrying charges.

Harvey Film on Circulation of the Blood. May be obtained from American Medical Association, 535 North Dearborn Street, Chicago, On thirty-five milli-

meter stock, three reels. No expense other than express charges one way.

Intestinal Peristalsis. By Walter C. Alvarez, M. D., Mayo Clinic, Rochester, Minnesota. This film may be rented for a small amount from the Eastman Company.

Intracapsular Cataract Extraction by the Vacuum Cup Method. By E. R. Crossley, M. D., 30 North Michigan Avenue, Chicago. Rental cost $7.50, plus express charges.

Irrigation of the Maxillary Sinus by Way of the Natural Opening. By Walter H. Theobald, 307 North Michigan Avenue, Chicago. No rental fee for this film.

Living Normal and Cancer Cells. Made by Warren H. Lewis of Carnegie Institution of Washington at Baltimore, Maryland. Available in sixteen millimeters and thirty-five millimeters sizes. May be secured from the American Society for the Control of Cancer, 1250 Sixth Avenue, New York. No expense other than transportation charges.

Mechanism and Electrocardiographic Registration of the Normal Heart Beat. By Clayton J. Lundy, 1405 Peoples Gas Building, Chicago. Rental cost is $5 for each day's showing, plus transportation charges.

Mechanism of the Heart Beat and Electrocardiography. By Lewis M. Hurxthal, M. D., Lahey Clinic, 605 Commonwealth Avenue, Boston. May be secured from the Worcester Film Corporation, State Mutual Building, Worcester, Massachusetts. On sixteen millimeter and thirty-five millimeter stock. Rental cost $10 per showing, plus shipping charges.

Plastic Operations on the Nose. By Edward King, 1002 Carew Tower, Cincinnati, Ohio. No rental charge; transportation costs only.

Valves of the Heart in Action. By American Heart Association, Inc., 450 Seventh Avenue, New York, New York. Transportation costs only.

X-ray Movies of the Stomachs of Animals. By Walter C. Alvarez, M. D., Mayo Clinic, Rochester, Minnesota. May be rented for a small amount from the Eastman Company.

Young Strong-Heart. A still film which deals with the treatment and prevention of rheumatic fever in childhood. May be secured from American Heart Association, Inc., 450 Seventh Avenue, New York. Sold for $2 a copy.

More complete information in regard to these films is on file in the Association office and available to inquiring secretaries.

COMPONENT COUNTY MEDICAL SOCIETIES

CONTRA COSTA COUNTY

The first autumn meeting of the Contra Costa County Medical Society was held on Tuesday, September 12, at the Hotel Carquinez, Richmond.

The meeting was called to order at 8:25 by Dr. L. H. Fraser, president.

Two outstandingly fine papers comprised the treat of the evening. Dr. Fred Loomis of Oakland presented a very practical and illuminating talk on *"Practical Details of Obstetrics."* Dr. Hubert Rowell read a brilliant treatise on *"Fear as an Element in Disease."* Both speakers were most enthusiastically received. Discussion of Doctor Loomis's paper was participated in by Doctors Weil, Daily, Beard, and Walter Johnson.

Application for membership in the society was made by Dr. Samuel Eldridge of Crockett. He was received into membership.

Dr. I. O. Church, assistant medical director of Alameda County, representing Dr. George Reinle, president of the California Medical Association, addressed the body, proffering aid in drafting a possible program for the solution of the medical treatment for the indigent of the county.

Dr. Harry Ford reported on the efforts and progress of the Committee on Public Relations during the summer vacation months. After considerable discussion by Doctors Dozier, Beard, Leggo, U. S. Abbott, and Weil, it was agreed that the results so far obtained by the committee be approved by the society, and that several meetings with the representatives from the Public Relations Committee of the State Medical Association, with the county supervisors, and with other public-minded citizens who were directly interested be arranged in the rather near future.

Dr. William Powell, county health officer, asked for the sanction of the society in his proposed intradermal tests for tuberculosis among the school children of the county. The motion was made by Dr. U. S. Abbott, seconded, and carried.

The report of the Committee on Public Relations was accepted.

It was voted that a meeting be held with a delegation from Oakland.

Dr. William Powell was appointed by Dr. L. H. Fraser to act in conjunction with the present Committee on Public Relations, following Doctor Powell's suggestion that the committee arrange to meet the county supervisors on the day of their regular meeting in Martinez.

Dr. J. Waldo Bumgarner, upon request of Doctor Fraser, announced his proposed change of residence from Richmond to Porterville, Tulare County. Doctor Fraser expressed the regrets of the society at losing Doctor Bumgarner from the ranks of our local society, which he served as president for two years.

Doctor Fraser announced the place of the October meeting as Martinez, with the business meeting of November at Richmond.

The meeting had an attendance of thirty-three—eight guests and twenty-five members.

The meeting was adjourned by Doctor Fraser at 10:40 o'clock, after which the social hour with a buffet luncheon was a pleasant conclusion.

CLARA H. SPALDING, *Secretary.*

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MENDOCINO COUNTY

The Mendocino County Medical Society and Auxiliary met at Fort Bragg on August 27.

Dinner was served at the Hotel Windsor at 1:30 p.m. The following members and guests were present: Doctors Babcock, Benson, Bowman, Cleland, Cushman, Howe, Hummel, Kruse, LeBaron, Pinto, Scudder, Toller, Wolfe, and Wrinkle; Mesdames Babcock, Bowman, Cleland, Cushman, Gleason, Kruse, Pinto, LeBaron, Rankin, Scudder, Toller, and Wolfe.

After the dinner the doctors met at the Redwood Coast Hospital, where Dr. Fred H. Kruse of San Francisco, as guest speaker, delivered an address on *"Gall-Bladder Disease."*

A short business meeting was held at which Dr. Harvey Pinto's application for membership was read.

PAUL J. BOWMAN, *Secretary.*

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ORANGE COUNTY

The Orange County Medical Association held its first meeting after the summer intermission on September 5 at Ketner's Café, in Santa Ana.

The first reading of the applications of Doctors Wightman and R. Harris was heard.

Doctors Remmen of Glendale and Fred Clarke of Long Beach spoke on the crying need of such an organization as the Public Health League, as did also Mr. Ben Read. Doctor Clarke extended an invitation to the members to attend the Harbor Branch medical meeting on September 29 to hear an address by the state president, Doctor Reinle.

Doctors Gobar and Maroon told briefly of their eastern clinic trips.

Doctors Harwood, Baker, McAuley and Cowles, under the capable leadership of Doctor Burlew, provided much merriment with their bedtime stories. Appropriate prizes were awarded the contestants.

WALDO S. WEHRLY, *Secretary.*

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SANTA BARBARA COUNTY

The regular meeting of the Santa Barbara County Medical Society was held in the Sherrell Auditorium, Cottage Hospital, on Monday evening, September 11, at eight o'clock.

The speaker of the evening was Dr. William H. Goeckerman of Los Angeles, formerly of Mayo Clinic, who gave an extremely interesting talk on *"Dermatophytosis and Dermatophytids."*

Discussion was by Doctors Pierce, Ullmann, and Means.

The society then went into executive session.

The Board of Censors reported that Doctors H. V. Findlay, William H. Wolfram, and J. H. Renner were eligible for membership, and upon balloting they were admitted into the society.

Doctor Henderson, for the Public Relations Committee, reported progress in the formation of a downtown dispensary, and advised that the city and county authorities had stated, unofficially, that they would be willing to support such an institution. Doctor Henderson asked that each member of the society do everything possible to further this program. At the conclusion of his talk it was moved, seconded, and unanimously carried, that the society endorse his program and do whatever possible for its furtherance.

WILLIAM H. EATON, *Secretary.*

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SONOMA COUNTY

The September meeting of the Sonoma County Medical Society was held at Buffi's restaurant, in Healdsburg, on September 14, seventeen guests and members being in attendance. In the absence of both the president and the vice-president, Past President Frank E. Sohler presided.

Dr. H. S. Gossage of Petaluma and Doctors Vera O. Honor and Herbert C. Honor of Cotati were elected to active membership.

Routine business, consisting of reports, communications and minutes of the preceding meeting, was transacted. Attorney J. C. Tauzer of Santa Rosa, guest speaker upon the NRA, told of the causes, present condition, and the recovery of our present depression. His remarks were timely and well received.

Dr. Ira A. Wheeler, late of Cloverdale, now residing in Colfax, was granted a transfer from the Sonoma County Medical Society to the Placer County Medical Society.

W. C. SHIPLEY, *Secretary.*

CHANGES IN MEMBERSHIP

New Members (38)

Alameda County.—Homer Alonzo Casey, John G. Saam, Grant Ellis, Charles Robert Nelson, Leonard Woods.

Fresno County.—Marvin Harrison Moore.

Los Angeles County—

Harry Wilson Boyd
Waldo F. Brinkman
Alexander C. Cameron
F. McLean Campbell
Robert L. Carroll
Tenero Danny Caruso
William F. Carver, Sr.
Roy A. Falconer
Lester Warren Fish
Paul Louis Gailmard
Donald Ezra Griggs
Ruth Hughes Hubbert
Samuel Edwin Hughes
Harper George Imler
Hyman Lischner
Samuel Andrew Scuderi
Herman Semenov
Leland Earle Stilwell
H. P. Totten
Wilbur George Rogers
Clarence J. Ryan
W. T. Zimmermann

San Diego County.—Frank C. Russell.

San Francisco County.—George S. Lachman, Ethel Righetti, Sol Maisler, Justin A. Rogers, Theodore Paul Schomaker, Albert M. Vollmer.

Santa Barbara County.—John H. Renner, William Henry Wolfram, H. V. Findlay.

Transferred (3)

Francis C. Ferry, from Orange to Los Angeles County.

Henry G. Hadley, from Los Angeles to Washington, D. C.

John Homer Woolsey, from San Francisco to Yolo-Colusa-Glenn County.

Resigned (3)

Cabot Brown, from San Francisco County.
John F. Martin, from Los Angeles County.
William C. Newton, from San Diego County.

In Memoriam

Armistead, Howell V. Died at Newman, September 12, 1933, age 74. Graduate of the University of California Medical School, Berkeley, 1885, and licensed in California the same year. Doctor Armistead was a member of the Stanislaus County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

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De Lucis, Cav. Andrea. Died August 21, 1933, age 82. Graduate of the University of Turin Faculty of Medicine and Surgery, Turin, Italy, 1881. Licensed in California, 1895. Doctor De Lucis was a member of the San Francisco County Medical Society, the California Medical Association, and the American Medical Association.

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Jorgenson, Hans Christian. Died September 9, 1933, age 57. Graduate of George Washington University Medical School, Washington, D. C., 1906. Licensed in California, 1920. Doctor Jorgenson was a member of the San Diego County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

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Magan, Shaen Saurin. Died August 30, 1933, age 37. Graduate of the College of Medical Evangelists, Loma Linda, 1921, and licensed in California the same year. Doctor Magan was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

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Schurter, Maximilian Adolph. Died August 21, 1933, age 51. Graduate of Long Island College of Medicine, Brooklyn, 1912. Licensed in California in 1923. Doctor Schurter was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

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Tower, Ora Isaiah. Died September 4, 1933, age 47. Graduate of the University of California Medical School, Berkeley, 1910. Licensed in California in 1914. Doctor Tower was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

OBITUARY

David William Edelman
1869-1933

WHEREAS, The members of the Los Angeles County Medical Society have lost a dearly beloved friend and colleague in the death of Dr. David W. Edelman; and

WHEREAS, Doctor Edelman was an honored practitioner for more than forty years in Los Angeles, during which time he devoted a great part of his activity to the care of the deserving poor and also took an outstanding part in the religious, civic and political life of Los Angeles, in all of which activities he endeared himself to all with whom he came in contact by his high idealism and outstanding personality; now, therefore, be it

Resolved, That the members of the Board of Trustees and the Board of Councilors of the Los Angeles County Medical Association do hereby record their sorrow, and direct that a copy of this resolution be spread upon the minutes of the Association; and that a copy of same be sent to the bereaved family, together with an expression of profound sympathy.

EDWARD M. PALLETTE, M. D.
HENRY H. LISSNER, M. D.
EDMOND M. LAZARD, M. D.

THE WOMAN'S AUXILIARY TO THE CALIFORNIA MEDICAL ASSOCIATION*

A Letter from the State President†

This letter is to acquaint you with the pleasures and vicissitudes of my trip to the National Convention, in the midst of a terrific heat wave.

I found many doctors on the train, the Milwaukee convention their destination. At Omaha we were greeted with a temperature of 106 degrees, almost unbearable with the added humidity. All travelers kept insisting we were due for a change in temperature when we arrived in Chicago; we were, but it was hotter. The warmest greeting of all awaited us there. It would have required a steel knife to cut through the heat. On arrival at the Pfister Hotel, Milwaukee, I had great difficulty in getting my reservations. I demanded them on the ground of heat prostration, which I felt was threatening, and was ushered to a room, again being told the heat was breaking. The maid came in to arrange my room, saying a friend, an ambulance driver, had been carrying bodies all morning. He said if he went for another body he would come back a corpse. This was encouraging. I wondered if I would join the ranks. Before going to my room I asked for an electric fan. The clerk reiterated, "The heat is breaking, you will not need one." My windows were thrown open, and I shall never forget the breeze that wafted through that room, carrying everything before it—a life saver, a glorious return to comfort and happiness. I may add the temperature dropped 30 degrees in fifteen minutes, and about the same in Chicago. After an afternoon of rest from my complete exhaustion, I went down to the lobby, where I found many auxiliary members arriving.

At nine o'clock the next morning, we registered and attended the preconvention board meeting in the Mirror Room of the Hotel. I first paid my respects to our national president from California, whom I found deluged in her responsibilities. It is not an easy task to fulfill these duties, and I think of my own responsibilities at Riverside next April.

A very delightful luncheon was held at the College Woman's Club, where a number of the national board women and the national president spoke very interestingly. This club was formerly the home of one of the Cudahy daughters, a Mrs. Dahlman of Milwaukee. All the women's clubs in Milwaukee are beautiful old homes given up as residences and remodeled to house women's clubs.

Then began a busy time. We had little opportunity for doing anything except meetings. There were 4,500 doctors registered, and 935 women registered at auxiliary headquarters. It was interesting to meet other state presidents and to hear their reports. Some of the reports were outstanding. Mrs. Bonar White, president of the Georgia auxiliary, a charming southern woman, had her listeners in a gale of laughter before she finished enumerating the things Georgia has accomplished. You will be informed later of their many activities. I am in receipt of a letter from her in which she says, "We always look forward to California. We watch California news items because we feel proud of your accomplishments." Let us live up to that reputation. The South was particularly well represented, as was the Middle West. New York was the baby auxiliary. Oregon and Washington state presidents were present, and you know the California president also registered. The eastern states were not so well represented. I believe the southern states are best organized. They are very ambitious, being interested in a million-dollar memorial to Jane Todd Crawford, the woman on whom the first ovariotomy was performed.

Mrs. Lamson, Washington state president, made a favorable impression immediately, because of her ability and outstanding knowledge. We learned she also had literary attainments, having contributed several books to the reading public over her own signature. I am hoping she will honor us with her presence at some future California Auxiliary meeting.

The social affairs were splendidly cared for by the convention committee, headed by Mrs. L. Rock Sleyster. The national board dinner was followed by a musicale given at the Woman's Club of Wisconsin. The program offered music of different countries by musicians in native costume, all Milwaukee talent.

On Tuesday the general meeting allowed everyone to meet everyone else. The luncheon and bridge at the Wisconsin Club, a gala affair, was attended by about six hundred women. The tour of gardens and trip to convalescent homes offered much. Also the informal dance at the Wisconsin Club brought to the minds of all what had made Milwaukee famous. The souvenirs were numerous and indicative. There were many other affairs, but the most outstanding entertainment was given by the Carnation Milk people, who provided Gray Line buses for about five hundred women for conveyance to Oconomowoc for a luncheon and tour of the milk plant. Music, folk dances, and many Carnation Milk babies made their début at the lunch. Members were given presents of milk cans, which, when reversed, sounded like a band of moo cows turned loose, adding much to the amusement. On return to our respective homes, souvenirs of canned milk and recipe books followed. A thirty-mile drive each way along the beautiful lakes added to a delightful day. A vote of appreciation was extended to the Carnation Milk Company for their splendid and generous hospitality.

The "bring your husband" dinner in the Fern Room of the Hotel Pfister, with cabaret from the International House, was well attended and greatly enjoyed.

The California president is much pleased to announce she had a seat at the speakers' table at which were the outgoing and incoming presidents of the national auxiliary, as well as Dean Lewis, president-elect of the American Medical Association, and Doctor Carey, who directed the exhibit of Medical Science in Science Hall at the World's Fair in Chicago. Doctor Carey spoke splendidly of the part to be taken by the Woman's Auxiliary and of our interest, so dominantly helpful at this time. I hope to have a message from Doctor Carey for you later.

At this same luncheon we had community singing of old tunes, with words written by Mrs. William

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* As county auxiliaries to the Woman's Auxiliary to the California Medical Association are formed, the names of their officers should be forwarded to Mrs. Thomas J. Clark, chairman of the Publicity and Publications Committee, 40 Ross Circle, Oakland. Brief reports of county auxiliary meetings will be welcomed by Mrs. Clark and must be sent to her before publication takes place in this column. For lists of state and county officers, see advertising page 6. The Council of the California Medical Association has instructed the editor to allocate one page in every issue for Woman's Auxiliary notes.

† Sent to all County Auxiliary presidents and state board members.

Myers of Savannah, Georgia. This singing struck a resonant note everywhere. It had been my pet theme to introduce community singing in the California auxiliary, until my husband asked if I intended making a camp meeting out of the auxiliary. The national has given me renewed courage. Let me know if you would like to copy the national by introducing singing in your auxiliary that we may be able to make it a successful part of our state meeting. I am sending you a copy of the songs sung at Milwaukee, from which you can have copies made.

At a beautiful home, set in the midst of colossal grounds on Lake Michigan's edge where tea was served the auxiliary, I was much intrigued on entering the house to find that all flowers, either cut or growing in pots, were the neglected and lowly geranium. I have never seen anything lovelier. They were in fancy shapes, tree shapes, fan shapes, tall slender vines, and the most exquisite colorings, grown to perfection, due to careful nurturing, potting, care and attention. Milwaukee makes most of her few short months of good weather in her development of beautiful shrubs and flowers. Her peonies are a thing of beauty.

The new national president is a splendid woman, who will give of her best and will ask the state auxiliaries to give of their best. Knowing that the national is dependent on the states, the states on the counties, she has compared us to a stage set with players, who must go on when cues are given. Your state president asks you to join Mrs. Blake's drama of Shakespeare, "All the world a stage, and we are only players from childhood to old age."

Mesdames McGlothlan, Hunsberger, Hesselgrave, and Lippincott are all very busy. They are the mothers, fathers, sisters and brothers of the auxiliary. In fact, they are

"The cream of the coffee,
The salt of the stew,
The eyes of the auxiliary
That our members see through."

Mrs. C. S. Red, author of "A Medicine Man in Texas," was a much esteemed member of the convention. Her book has brought in quite some money, which she has donated for education of medical students, and already several students have profited. These student funds are gaining in popularity, and I am hoping California may be able to join so useful and philanthropic a venture. I know there are one or two counties that have established student funds, but I am hoping it will become a leading part of our activities.

I have kept for the last the inspiring and beautiful thoughts expressed in the devotion to the memory of Mrs. Corrine Keene Freeman. There was not a paper presented or thought or action expressed without a great appreciation of her fine womanliness, of her unselfishness, and of her desire to carry her work to a higher plane. We stood in silence to honor her. Beautiful tributes were paid her. All who had not had the privilege of personal contact felt a keen loss. Her very personality pervaded the convention. Mrs. Keck of Pennsylvania was given the privilege of presenting a memoriam to Mrs. Freeman. She said, among many things, "Corrine Keene Freeman was taken from us in the midst of the administration of her trust and at the moment of her highest possible service." What finer tribute could be paid to her. In closing, Mrs. Keck quoted from Owen Meredith's "Lucile":

"Long, long may my heart
With sweet memories be filled,
Like the vase in which roses
Have once been distilled.
You may break, you may shatter
The vase if you will,
But the scent of the roses
Will cling round it still."

MRS. ANDREW MITCHELL HENDERSON, *President.*

NEVADA STATE MEDICAL ASSOCIATION

O. HOVENDEN, McGill ..... President
D. A. SMITH, Mina ..... President-Elect
J. N. VAN METER, Las Vegas ..... First Vice-President
FLEET H. HARRISON, Minden ..... Second Vice-President
HORACE J. BROWN ..... Secretary

COMPONENT COUNTY MEDICAL SOCIETIES

WASHOE COUNTY

The Washoe County Medical Society held its regular monthly meeting in the library room of the State Library Building, Reno, on the evening of September 12.

A communication was read from the National Nurses' Association of New York with reference to their willingness to coöperate with President Roosevelt's progress movement of the NRA. The society decided to refer the matter to the Nevada State Nurses' Association, and so directed the secretary.

The application of Dr. Rodney Wyman of Long Island, a graduate of the medical department of Columbia University, New York City, was read and turned over to the censors for investigation and for report to the society.

Mr. Al Shipaugh of Sparks was given permission to appear before the society to speak of the relief to be extended to needy persons for the fall and winter. This relief would come through the national Reconstruction Finance Corporation board, and would automatically do away with such agencies as the Red Cross and Salvation Army. The board will be located on the upper floor of the State Building, with telephone 7181. A further purpose of the board was to give medical and surgical attention to all worthy persons of the county who have been citizens of this county for at least two years. For transients the Salvation Army would be authorized to provide a minimum amount of food and shelter. Indigent sick persons coming under this clause would be permitted to choose their own physician or surgeon, and for such service a fee such as will be determined by the aforesaid organization will be paid.

There being no further business, the society turned to the program of the evening. Dr. W. A. Shaw, for many years practicing at Elko, but for the last two years engaged in postgraduate study in children's diseases, was called upon to deliver an address on his experience in postgraduate work in the United States and abroad. Doctor Shaw began by relating some of his experiences, of one year's duration, in New York City with the New York Postgraduate School. After official affiliation with the New York Postgraduate School he went to Europe. His first contact was with a clinic and hospital of San Juan de Dios near Bilboa, Spain. He spoke most highly of the efficient orthopedic work in children done by Dr. Manuel Salaverri. The clinic was under a Catholic order of Brothers, and the clientele was composed exclusively of boys; there were no female attendants. Doctor Salaverri had been a student for several years under Lorenz, in Vienna. The clinic and hospital of Stefania Korhaz, Budapest, was next visited for three months. Doctors Elemer Hainiss and Aurel Koos were at the head of the institution, and were able to present a very large and diversified clinic in both medical and surgical diseases in children. This clinic is rather outstanding, and receives patients from all parts of Europe. It is the largest children's clinic on the Continent.

The next three months were spent in Vienna, where the work for American physicians was supervised by the American Medical Association of Vienna through the faculty of the Vienna University. Here the work was most extensive and instructive. The particular point to secure foundation for instruction was in the volume of material furnished at the clinic—medical,

surgical, pathological; in fact, the whole realm of medical and surgical science was presented in such mass and with such scientific accuracy that the student could not fail to be greatly benefited by this unusual contact.

The pleasant surroundings brought out by the American Medical Association of Vienna for doctors from all parts of the world, their clubrooms, and the arrangement for participation in courses of medicine or surgery, make the newcomer perfectly at home and soon inducted into his chosen field of study.

Following further study, Doctor Shaw returned to the United States and remained two months in the Children's Hospital in Boston, and spoke most highly of the work done there. He concluded his American trip with a month at the Mayo Clinic under Doctor Helmholz, where the time passed quickly in profitable instruction.

Doctor Shaw's medical travelogue was well received by the society. The society then adjourned till the October meeting.

There were twenty-one members present.

THOMAS W. BATH, *Secretary.*

C. M. A. DEPARTMENT OF PUBLIC RELATIONS*

"What Is Wrong with National Health Insurance?"†

By SIR HENRY BRACKENBURY, LL.D., M.R.C.S.

By this address I want to be provocative of thought. My title is not a statement, but a question; and though relative brevity must almost always lead to some appearance of dogmatism, I do not want to be dogmatic but interrogatory. First, I want to recall two passages from the Memorandum of Evidence submitted on behalf of the British Medical Association to the Royal Commission on National Health Insurance.

"The measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system."

"The organization of a National Health Insurance scheme is not necessarily, or even probably, the best means of utilizing limited resources for the promotion of national health. It is more than likely that there are a number of other directions in which, severally or collectively, a corresponding expenditure would produce an even more satisfactory return."

Those statements were made more than eight years ago. There can be no doubt, however, that contradictory as some may think them, they are both regarded as true by the great majority of the medical profession today.

Bearing these statements or truths prominently in mind, I want, if I can, to administer three shocks. To some my three main points may not come as shocks at all, for there must be a number in this audience who, in the course of their meditations on the public health, have recognized the tendencies to which I shall draw attention, and who may regard my statements as mere commonplaces. There are others to whom the shock will be only mild because, without feeling their wide significance, they have been aware of the indications of danger. But to me, as soon as I realized their full implications, the conditions to which I wish to attract notice did come as a shock, and I feel sure that this must be their effect upon many others who have long been engaged in public health and insurance work, and certainly upon "the man in the street" and "the woman in the home."

QUESTION I

Adhering to the interrogatory form, I ask first: "Is it possible that the national health insurance scheme is becoming not primarily a method of securing medical advice and treatment for the insured persons, but primarily a machine for doling out to those persons small sums of money week by week or month by month?"

There has been organized for next month a luncheon in celebration of the coming of age of national health insurance. During these twenty-one years, quite apart from the cost of benefits of a medical nature, there has been spent in small pittances and on the machinery engaged in their distribution, no less than £500,000,000. If in the year 1912 a carefully selected body of persons had been told that that very large sum of money was placed at their disposal to expend by 1933 in the promotion of health and the prevention of disease in this country, over and above whatever provision was made for medical attention to the people in cases of actual illness, can it be doubted that they would have found much better, more profitable, more effective directions for its expenditure? Yet during the next twenty-one years an even larger sum of money may continue to be disbursed in similar ways.

I am casting no reflection upon approved societies and their work. On the contrary, I am filled with admiration at the success of their administration; at the smoothness, accuracy, and kindliness with which, week after week, they have directed these Treasury notes or small coins to their proper destination, in general without any large body of serious complaint; at the fine offices some of them have been able to erect and occupy; at the small armies of persons they employ; at the large sums they have placed to reserve; and at the large salaries, fully earned and thoroughly deserved I doubt not, which their chief officials are able to command.

With the exception of some of the smallest, the approved societies do their work magnificently and with extraordinary effectiveness. But are the functions they perform, whatever be their relation to social welfare in general, essential for the purpose of preventive medicine and public health? As I see it, the aspect of the matter to which I am drawing attention has been getting more prominent as the years have passed. Today, more than ever, I find public attention—the attention both of those who provide the money and of those who receive it—concentrated on the cash benefits which may be claimed rather than on the medical attention which may be secured. To a not inconsiderable degree the national health insurance system is in danger of becoming a gigantic machine for the distribution of shillings and only secondarily a beneficent medical and health service. I suggest that these two aspects of the scheme should be separated: in the financial sphere as completely as possible, in the administrative sphere as distinctly as possible. Only in this way shall we be able, on the one hand to provide, at a moderate cost, or on a compulsory insurance basis at a moderate premium, medical, surgical, maternity, and ancillary services for those who need such provision; and, on the other hand, to consider how far arrangements should be made for cash benefits, or whether, or to what extent, the money needed for such cash benefits might not be better spent on making provision for the public health on other lines or used or saved for other national purposes.

QUESTION II

Secondly, I ask, "Is the national health insurance system, even on its medical benefit side, progressively failing to cover the field for which it was intended to make provision?"

Already a considerable number of insured persons have fallen out of medical benefit by reason of unemployment. A larger number have been kept in benefit only by successive Acts of Parliament. After December 31 next, in consequence of the latest Act,

* An open forum for progress notes on the department's activities, and for brief discussions on medical economics. Correspondence and suggestions invited. Address Walter M. Dickie, Room 2039, Four Fifty Sutter Street, San Francisco. This column is conducted by the Director of the Department.

† Abstract of presidential address to the Section of Preventive Medicine at the Congress of the Royal Sanitary Institute at Blackpool, June, 1933.

a further number of persons will pass out of insurance. It is safe to say that this will be considerably larger than the 100,000 mentioned some time ago by the Ministry of Health as the result of what is now admitted to have been a not very reliable guess.

I am not here going to discuss the problem so presented. It is part of the larger problem of necessitous areas in general. On the one hand, it is necessary to preserve the insurance principle by not giving benefits for which no corresponding premiums have been paid, while, on the other hand, it is impossible or undesirable to create a specially privileged class of noninsured persons. My point is simply this: that whereas the national health insurance scheme was intended to make provision for medical attention for all manual workers and for the less highly paid among nonmanual workers, a steadily increasing number of such workers are passing out of the scheme. Moreover, these must in large degree, or at least to an extent proportionately larger than normal, be persons for whom the provision is most required—persons with some infirmity, in impaired health, and in distressed circumstances. Must we not be concerned, then, as to whether, in fact, national health insurance is not beginning to fail of its national purpose? If this be so, it is immediately necessary either to make the provision by some other method which will be more all-embracing, or to arrange for these persons to be retained within the scheme so far as medical benefit is concerned by securing a properly calculated amount by way of premiums paid on their behalf. These people, on passing out of the insurance scheme, are thrown back either upon the charity of the medical profession or upon the arrangements made by public assistance committees. Neither will fail them; but I suggest that when, growing out of the national health insurance scheme, there is developed a general medical service for the nation it will be essential, and by no means difficult, to provide for the inclusion, by one and the same method, of those who are no longer able to make any individual contribution.

QUESTION III

My third question is, "Are we sure that the method of compulsory insurance, whatever be its merits as a means of providing medical benefit in the widest sense, is the right method for securing cash payments?"

Such experience of life as I have had, together with my reading of the experience of others in this sphere, suggests that we have made a mistake here. It suggests, further, that the mistake has been owing to an imperfect attention to the habits and psychological reactions of a significant proportion of working-class families. What proportion such families as those I am thinking of bear to the whole I do not know—it may easily be as large as one-fifth or a quarter. They consist of persons who have very little sense of property and who happily have no desire to possess or accumulate it. They are not necessarily bad or unattractive persons on that account: nor, except at times, are they, properly speaking, poor. They very likely live in what is described as a poor home, because as a rule there is not much room and very little furniture; but often, and certainly in good times, a surprising amount of money comes into the house each week. What they have they spend, sometimes on superabundant but often ill-chosen sustenance, almost universally on the more popular forms of enjoyment and entertainment. When times are bad they look for all sorts of windfalls and use all sorts of shifts and strategems to secure what is needed at the moment. There is no advantage in including such people in an insurance scheme. They are constitutionally unable to appreciate its meaning. They will resent or fail to pay their contributions. They will honestly regard such cash benefits as the scheme provides for as things to be exploited and by some means or other to be secured when need arises and other resources fail. For them the appropriate means of relieving destitution (not of providing medical attention be it noted—that comes in the other category) is not an insurance scheme but a sympathetically administered Poor Law.

For the bulk of wage-earners, for that great majority who have a reasonable sense of property and who see the need for thrift, even if some of them cannot understand the niceties of insurance, an insurance scheme to secure cash payments in appropriate circumstances is a most valuable thing. Experience shows that when it is offered advantage will be taken of it. I suggest that while there should be a national scheme for insurance for cash benefits, while there should be extensive propaganda and abundant facilities for such insurance, and within limits governmental contribution toward it, any scheme for these purposes should be on a voluntary basis. It would supply the felt need; no doubt by education and example it would gradually extend its field of recruitment; but it would avoid the difficulties and abuses which most of us have experienced as arising when the opportunity for cash payments is compulsorily extended to those whose ingrained habits and modes of thought prevent them from appreciating the conditions with which those opportunities are surrounded. I doubt, indeed, whether it will be possible for the nation to continue much longer upon the present lines.—*Supplement to the British Medical Journal* (London), Saturday, July 15, 1933.

Rats Menace Health and Wealth.—Not only do rats carry disease, but they also cause enormous economic losses. These losses consist not only in destruction of foodstuffs, but in property damage as well. It has been determined that there are more rats than people in the United States. There is at least one rat for every resident in American cities, and in the rural districts there are several rats for each resident. In grain-producing areas there is a relatively higher rat population.

It has been determined, furthermore, that a rat will consume fifty pounds of grain a year and will damage a much larger amount. One-half cent a day is a conservative estimate of the cost of the damage done by each rat. This amounts to nearly $2 a year for each rat, a total of at least $180,000,000 annually in the United States.

Among the edible products consumed by rats are the following: grain, vegetables, fruits, eggs, poultry (especially young chickens), bakery goods, grocery supplies, meats, flowers, bulbs, and countless other commodities.

Leather goods, books, clothing, fabrics, and paper are commonly destroyed by rats for use in building their nests. They are able to gnaw through lead pipe and other soft metal products. Disastrous fires are frequently caused by rats gnawing matches or wires carrying electric current.

The principal disease carried by rats is plague. They also carry paratyphoid fever, trench fever which was commonly encountered in the World War, and other less common diseases. Rats are also subject to an extremely wide variety of diseases which are considered as present in these rodents only; some of them, however, may bear a relationship to diseases found in human beings.

The following standard measures are commonly used in the destruction of rats:

1. The protection or removal of rat food.
2. The killing of rats by poison and traps.
3. The removal of material which permits a refuge for rats.
4. The remodeling of all nonratproof buildings.
5. Closure of all openings in existing ratproof buildings.
6. Erection of ratproof buildings only.—*Weekly Bulletin, California Department of Public Health.*

Where education has been entirely neglected or improperly managed, we see the worst passions ruling with uncontrolled and incessant sway. Good sense degenerates into craft, and anger rankles into malignity. Restraint, which is thought most salutary, comes too late, and the most judicious admonitions are urged in vain (S. Parr).—*Weekly Bulletin, California Department of Public Health.*

MISCELLANY

Under this department are ordinarily grouped: News; Medical Economics; Correspondence; Twenty-five Years Ago column; Department of Public Health; California Board of Medical Examiners; and other columns as occasion may warrant. Items for the News column must be furnished by the fifteenth of the preceding month. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

Coming Meetings.

California Medical Association, Riverside, California, April 30 to May 2, 1934. Emma W. Pope, M. D., Secretary, 2004 Four Fifty Sutter, San Francisco.

American College of Surgeons, Chicago, Illinois, October 9-13, 1933. Franklin H. Martin, M. D., Director-General, 40 East Erie Street, Chicago.

Pacific Coast Society of Obstetrics and Gynecology, Portland, Oregon, October 19 to 20, 1933. Clarence A. De Puy, M. D., Secretary, 230 Grand Avenue, Oakland.

Interstate Postgraduate Medical Association of North America, Cleveland, October 16-20, 1933. W. B. Peck, M. D., Managing Director, 12½ East Stephenson Street, Freeport, Illinois.

Oregon State Medical Society, Portland, October 26-28, 1933, Albert W. Holman, M. D., Secretary, 364 Washington Street, Portland.

Society of Plastic and Reconstructive Surgery, New York, October 16 to 18, 1933. Gaston Labat, M. D., Secretary, 30 East Fortieth Street, New York City.

Southern California Medical Association, Los Angeles, November 3 to 4, 1933. Robert W. Langley, M. D., Secretary, 1930 Wilshire Boulevard, Los Angeles.

Medical Broadcasts.*

American Medical Association Health Talks.—The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., over Station WBBM (770 kilocycles, or 389.4 meters).

There is also a fifteen-minute talk, sponsored by the Association, on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

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San Francisco County Medical Society.—The San Francisco County Medical Society broadcasts every Tuesday from Station KFRC, 4 to 4:15 p. m., and over Station KJBS from 11:15 to 11:30 a. m.

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Los Angeles County Medical Association.—The radio broadcast program for the Los Angeles County Medical Association for the month of October is as follows:

Tuesday, October 3—KECA, 9:30 to 9:45 a. m. and KFI, 10:15 to 10:30 a. m. Subject, Snake Bites.

Tuesday, October 10—KECA, 9:30 to 9:45 a. m. and KFI, 10:15 to 10:30 a. m. Subject, That Cold.

Tuesday, October 17—KECA, 9:30 to 9:45 a. m. and KFI, 10:15 to 10:30 a. m. Subject, Some Pertinent "Don'ts."

Tuesday, October 24—KECA, 9:30 to 9:45 a. m. and KFI, 10:15 to 10:30 a. m. Subject, What Price Health.

Tuesday, October 31—KECA, 9:30 to 9:45 a. m. and KFI, 10:15 to 10:30 a. m. Subject, Baby Learns to Walk.

Recent Advances in Bacteriology and Immunology—University of California Lectures by Dr. Charles Weiss.—A course of twelve lectures will be given in Toland Hall, University of California Hospital, Third and Parnassus Avenues, San Francisco, on Thursday evenings at eight o'clock, beginning October 5, 1933. The topics follow:

Lecture 1, October 5.—Current problems in bacteriology: dissociation, virulence, synergism, and antagonism. The nature of mixed and chronic infections.

Lecture 2, October 12.—Summary of our present knowledge of bacterial metabolism.

Lecture 3, October 19.—The filterability of microorganisms and the problem of filterable viruses; "new" diseases caused by filterable viruses and Rickettsia.

Lecture 4, October 26.—Bacteriophage; its biology and its value in therapy.

Lecture 5, November 2.—Experimental epidemiology.

Lecture 6, November 9.—The reticulo-endothelial system and its importance in immunity and chemotherapy.

Lecture 7, November 16.—The chemistry of antigens. (A review of the recent work of Landsteiner, Zinsser, Heidelberger, and Avery.)

Lecture 8, November 23.—Bacterial allergy.

Lecture 9, December 7.—The defense mechanisms of the lungs and pleura, with special reference to the enzyme-antienzyme balance.

Lecture 10, January 18, 1934.—The immunology of tuberculosis and syphilis.

Lecture 11, January 25.—Current problems in etiology, with special reference to the causes of influenza, "rheumatism" and trachoma.

Lecture 12, February 1.—Recent work on the blood groups, with special reference to the determination of non-paternity and the study of human races.

Library Exhibit.—The new exhibit in the University of California Medical School Library is concerned with Ramazinni, the "father of industrial medicine."

Symposium on Heart Disease.—The Heart Committee of the San Francisco County Medical Society will hold a two-day postgraduate teaching course on heart disease, November 22 and 23. This meeting marks the fourth annual symposium of the Heart Committee. There is no fee in connection with the course, and all doctors who are interested are welcome to attend. If you desire a program, please notify the secretary, Dr. J. Marion Read, 490 Post Street, San Francisco, and a copy will be sent to you as soon as the programs are printed. The meetings will be held in half-day sessions at the San Francisco, University of California, and Stanford University hospitals, and at the new Department of Public health building.

State Medical Library Exhibit.—The San Francisco branch of the State Medical Library at the University of California Medical School announces that it has available a collection of over seven hundred mounted pictures of biographical and historical material relating to subjects of a medical nature. Members of the California profession desiring such illustrative medical material are invited to correspond with Miss Frances Tomlinson, State Medical Library, University of California Medical School, Third and Parnassus Avenues, San Francisco, regarding their wants.

* County societies giving medical broadcasts are requested to send information as soon as arranged (giving station, day, date and hour, and subject) to CALIFORNIA AND WESTERN MEDICINE, 450 Sutter Street, San Francisco, for inclusion in this column.

University of California.—Dr. J. M. D. Olmsted, professor of physiology at the University of California Medical School, Berkeley, exhibited a large series of water color paintings in Haviland Hall, recently. Most of these had been painted by Doctor Olmsted in the past three years while traveling in France and England and various parts of this country.

* * *

Dr. John Ruhrah, clinical professor of pediatrics at the Johns Hopkins Medical School, and an authority on the history of diseases of children, spoke before the faculty and students in Toland Hall, University of California Hospital, Wednesday noon, September 13. His subject was poliomyelitis.

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Dr. P. K. Knoefel, Fellow of the National Research Council for the past two years in the pharmacological laboratory of the University of California Medical School, has accepted a research appointment in the department of pharmacology at Vanderbilt University Medical School. Doctor Knoefel will continue his studies on anesthesia.

American People Superior Because of Better Foods. Better feeding of the American people, whether accidental or planned, has actually produced a people of better physique within a few decades.

This view was expressed before the American Home Economics Association meeting by Prof. Agnes Fay Morgan of the University of California.

Citing achievements deriving in part, at least, from better food, Professor Morgan named: Vastly improved infant health and survival; lowered mortality and morbidity at all ages; accelerated rates of growth in children; and more comfortable as well as longer deferred and longer lasting old age.

There remain, Professor Morgan said, three pressing problems which may be of nutritional origin. These are still to be solved: The prevention and cure of malignant growths; the control of susceptibility to infectious diseases; and the prevention of the circulatory and metabolic diseases which are now one of the chief causes of death of middle-aged and elderly persons.

One Puppy Sends Sixty-Two Men to Hospital.—A dog, three months old, was recently adopted as a camp pet in one of the Civilian Conservation Corps camps located in Los Angeles County. This dog became restless and roamed about the camp, snapping at many individuals. It appears that he visited about a great deal, calling upon nearly everyone in the camp, and by the time his condition became recognized as serious he had visited sixty-two Civilian Conservation Corps men, four United States forest rangers, six civilians, and had either bitten, licked, or otherwise exposed a total of seventy-two human beings.

Upon the death of the dog, the head was sent to the Los Angeles County Health Department laboratory, where a positive examination for rabies was made. All individuals who had been exposed were placed under treatment. The Civilian Conservation Corps camp men were placed in a government hospital and the civilians were treated privately. Further investigation revealed the fact that the dog came from a litter in which the mother dog and the whole litter of pups had rabies.

This is an unusual occurrence, but it emphasizes the importance of exercising proper safeguards in the prevention of this disastrous and highly fatal disease. It is believed that the Pasteur treatment was started sufficiently early in individuals who had been exposed to the infection to insure the prevention of the development of rabies in any of them.—*Weekly Bulletin, California Department of Public Health.*

CORRESPONDENCE

Subject of following letter: Communication to the California Medical Association secretary from the dean of the University of California Medical School, regarding procedures with clinic patients.

University of California Medical School,
September 18, 1933.

Dear Doctor Pope:

The present time of economic stress bears no less heavily on medical men than on other citizens. In hope of obtaining medical care free, or at less cost, many citizens are applying to clinics for aid.

No greater ill could befall the community than to have the medical profession disintegrated and weakened by loss of financial and moral support. It is, therefore, imperative that every clinic refuse every applicant for aid who is able to pay a private doctor unless that applicant has been sent by a registered physician or is in need of emergency care.

University clinics have, as a major duty, the effective training of young medical men who are to fill the ranks of the fraternity of medicine when time depletes and weakens them. This is essential to the welfare of the medical profession and the community alike. Unless young medical men have daily contact with patients effective physicians cannot be trained. Thus, is it not, therefore, to the benefit of the profession to provide the teaching clinics with patients?

Our teaching clinicians have no desire to compete in practice with their colleagues; but they are interested and do need some patients whose study will benefit the patient and the young medical man alike. This coöperation between the clinics and the practitioners must be a two-sided matter, and in order to do its part to protect the proper interests of the practitioners of the state the social service workers of the University of California Medical Department are instructed carefully to exclude from the clinic any patient able to pay a private physician. To insure this exclusion, a full statement of the applicant's economic status is taken, together with a signed declaration from him that the statement is true. The declaration is to be signed after the patient is shown a copy of the San Francisco ordinance which makes false representation about economic status a punishable misdemeanor. The applicant is also asked to supply a letter of recommendation from two responsible citizens.

The social service worker has also to discover the name of the last physician seen by the applicant. At the next visit the applicant must bring a letter from this doctor, or if this is impractical, the social service staff communicates to the physician named by the applicant all the facts developed by social investigation and binds the clinic to be guided by that physician's advice. If the applicant is from a county other than San Francisco, the County Welfare Department is consulted. All those from San Francisco are reported daily to the Social Clearance Bureau. This bureau is maintained by the Community Chest of San Francisco in order that every clinic applicant may be known at all clinics, to the end that duplication and abuses may be avoided.

The applicant must give a signed permission to have any present or past bank account investigated. If this investigation shows that his economic state renders him an improper subject for clinic care, the physician named by the applicant is notified of the result of the investigation.

The economic status of the individual under treatment is followed and, if the income should sufficiently improve, the patient is sent back to his private physician, who then is provided with all the social and medical data developed by the clinic.

The University of California clinic administration believes that by these efforts it is proving its interest in the welfare of our colleagues in practice. If you or any members of your society can suggest other or better means of protecting the practitioner's interests, we will be happy to have them communicate with us and to put them into effect whenever possible.

(Signed) Langley Porter, M. D., *Dean.*

TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. VI, No. 10, October, 1908

From Some Editorial Notes.

Supposed to Work.—The secretary of a county medical society is supposed to do a lot of work willingly and cheerfully, knowing that, in general, he will not receive the thanks to which he is entitled; indeed, much of his work will be entirely unappreciated by the members. He is not supposed to sit upon that which the Lord intended to be either sat upon or kicked and do nothing but enjoy what he may be pleased to regard as an empty honor. There is no empty honor in holding down a secretaryship if the holder does his work. "As the secretary, so the society," is a pretty good and a pretty truthful saying. . . .

What Are You Doing?—"What are you doing for the world?" Did you ever seriously ask yourself the question? Are you really doing anything, or are you living an absolutely selfish existence, thinking only of your own life and your own fortunes, practicing your profession for the revenue there is in it, and thinking nothing of your real duty to the rest of humanity? Your profession is an altruistic one; are you personally imbued with any of this spirit of altruism . . .

From an article on "The Bacteriology and Pathology of Plague" (With the Demonstration of Gross and Microscopic Specimens) by William B. Wherry, M. D., San Francisco, Bacteriologist to the San Francisco Board of Health.

It will be impossible to give a full account of this subject in the allotted time, so I will simply review a few facts which physicians and epidemiologists must always have in mind.

From an article on "The American Medical School and Its Entrance Requirements" by David Starr Jordan, Stanford University.

The American university of today is a compound of two divergent and more or less antagonistic elements which, in the current academic languages, we call the college and the university. The college, in theory, is a place for general culture, for training the mind, broadening the intellectual horizon, and, so far as may be, making, by tasks physical, moral and mental, a man or woman better fitted for the work of the world. The university is a place of training for one's specific duties in life. . . .

It is safe to prophecy that before many years the American university will abandon the junior college work, relegating it to the college on the one hand and to the graduate courses of the secondary schools on the other. . . .

The practice of medicine is no longer a trade but a profession. It is an art having its basis in science—and art of the greatest delicacy resting on science the most exact and the most profound. . . .

For these reasons, the old-fashioned medical school of America, the association of physicians working without pay and without endowment, dealing with students ignorant of science and literature, is passing away. Medical instruction is resuming its place in the university, where it has the benefit of university standards, university endowments, and university atmosphere. Of the many scores of medical colleges existing in America today, only those can live which become integral parts of the universities. . . .

* This column strives to mirror the work and aims of colleagues who bore the brunt of society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and new members.

(Continued on Page 14, Advertising Section)

BOARD OF MEDICAL EXAMINERS OF THE STATE OF CALIFORNIA*

By CHARLES B. PINKHAM, M. D.
Secretary-Treasurer

1933 Report of Board of Medical Examiners†

Results of Board of Medical Examiners' Examination, San Francisco, July 11 to 13, 1933.—Charles B. Pinkham, M. D., secretary-treasurer of the Board of Medical Examiners of the State of California, reports results of the written examination held in San Francisco, July 11 to 13, 1933. The examination covered nine subjects, and included ninety questions for physician and surgeon applicants. An average of 75 per cent was required to pass. An allowance of 1 per cent, added to the general average, is allowed by the Medical Practice Act for each year of medical practice under a license granted elsewhere than in California, provided the applicant has not fallen below 60 per cent in more than one subject.

One hundred and twenty-one applicants took the examination.

Among the examinees were graduates of extrastate medical schools, including Austria, Canada, Italy, and Russia.

The following institutions were represented:

PASSED

College	Year of Graduation	Per Cent
College of Medical Evangelists	1933	87 5/9, 80 3/9, 83 8/9, 86 6/9, 85 4/9
Cornell	1930,	78 3/9; 1932, 84 5/9, 83 7/9
Creighton	1932,	81 8/9; 1933, 82 5/9, 75 5/9, 88 1/9
Harvard	1930,	81 6/9; 1931, 86 6/9, 87 4/9
Johns Hopkins	1931	82 3/9
McGill University Faculty of Medicine, Canada	1933	81 8/9
Northwestern	1933	87 3/9, 92 5/9, 77 6/9, 79 7/9, 84 6/9, 90
Royal University of Milano, Italy	1928	80 1/9
Stanford	1933	85 8/9, 82 8/9, 89, 80 3/9, 78 3/9, 84 3/9, 87 8/9, 90 6/9, 86 6/9, 89 1/9, 86 3/9, 83 4/9, 84, 79 8/9, 88 6/9, 85 5/9, 81 3/9, 89 6/9, 83 5/9, 86 2/9, 85 2/9, 82 2/9, 87 6/9, 82 6/9, 87 4/9, 84 5/9, 81 2/9, 79 6/9, 87 5/9, 86 5/9, 90 1/9, 88 4/9, 88 2/9, 91 8/9, 83 5/9, 88, 89 4/9, 87 2/9
University of California	1932,	85 4/9; 1933, 82 6/9, 86 3/9, 84 1/9, 89 5/9, 84 7/9, 88 6/9, 81, 88 8/9, 86 7/9, 85 2/9, 83 1/9, 83 4/9, 86 2/9, 84, 88 1/9, 85 4/9, 88 1/9, 87 1/9, 88, 86 6/9, 79 1/9, 85 5/9, 90 4/9, 85 7/9, 86 4/9, 86 5/9, 91 1/9, 84 2/9, 89, 83 2/9, 83, 86 3/9, 88 1/9, 81 3/9, 85 1/9 86, 88, 85, 85 7/9, 81 1/9
University of Cincinnati	1933	86 8/9
University of Colorado	1932	86 7/9, 80 5/9
University of Illinois	1933	80 5/9, 82 5/9, 82 8/9
University of Kansas	1932	86 6/9
University of Louisville	1932	82 5/9
University of Oklahoma	1932	84
University of Oregon	1932	78, 83 1/9
University of Rochester	1932	82 6/9
University of Toronto, Canada	1931	87 6/9
University of Vienna, Austria	1932	78
Washington University	1932,	86 2/9, 87; 1933, 78 8/9

FAILED

College	Year of Graduation	Per Cent
Psychoneurological Institute, Medical College, Russia	1917	70 3/9

* * *

Results of Board of Medical Examiners' Examination, Los Angeles, July 25 to 27, 1933.—The following institutions were represented:

PASSED

College	Year of Graduation	Per Cent
Carl-Frances University, Austria	1928	75 2/9
College of Medical Evangelists	1932,	77 6/9; 1933, 86 5/9

* The office addresses of the California State Board of Medical Examiners are printed in the roster on advertising page 6.

† Report of the Board of Medical Examiners of the State of California, submitted in August, 1933, through the Department of Professional and Vocational Standards, to Governor James Rolph, Jr.

(Continued on Page 17, Advertising Section)